

NASLOVNA STRAN S KLJUČNIMI PODATKI O NAČRTU

VRSTA NAČRTA:

**2 Načrt s področja gradbeništva
2/3 Tehnični prikaz armature**

Temelji jeklene konstrukcije strehe nad tribunami

INVESTITOR:

**MESTNA OBČINA MURSKA SOBOTA
Kardoševa ulica 2, 9000 Murska Sobota**

OBJEKT:

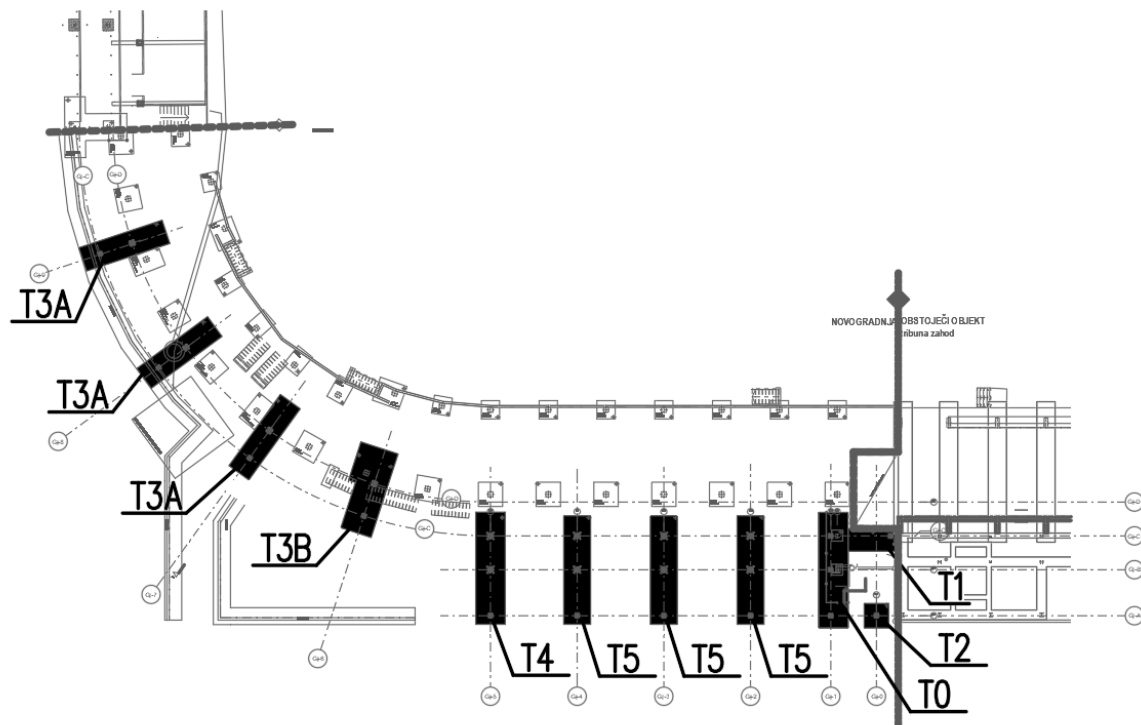
STADION FAZANERIJA MURSKA SOBOTA

VRSTA PROJEKTNE DOKUMENTACIJE:

PZI (projektna dokumentacija za izvedbo gradnje)

ZA GRADNJO:

Novogradnja – novozgrajen objekt



ŠTEVILKA NAČRTA , KRAJ IN DATUM IZDELAVE NAČRTA:

119/25, Domžale, julij 2025

PODATKI O GRADNJI

naziv gradnje

SEVEROZAHODNA POKRITA TRIBUNA S POMOŽNIMI PROSTORI
NA OBMOČJU STADIONA FAZANERIJA

kratek opis gradnje

Predmet projekta je:
Novogradnja severozahodne pokrite tribune s pomožnimi prostori (STAVBA 1 po GD št. 251-610/2024-6230-27 z dne 03.04.2025). Dela obsegajo zemeljska dela in potrebne ukinitve oz. prestativte komunalnih vodov, temeljenje, montažo prefabriciranih armiranobetonskih elementov tribun, izvedbo jeklene konstrukcije strehe, montažo stolov na tribunah, izvedbo javljanja požara in osvetlitve na tribunah, finalizacijo dela nadstropja za VIP goste in zunanjo ureditev - navezava na obstoječe ureditve.

VRSTE GRADNJE



NOVOGRADNJA - NOVOZGRAJEN OBJEKT

označiti vse ustrezne vrste gradnje



NOVOGRADNJA - PRIZIDAVA



REKONSTRUKCIJA



SPREMEMBA NAMEMBOSTI



ODSTRANITEV CELOTNEGA OBJEKTA



LEGALIZACIJA



MANJŠA REKONSTRUKCIJA

PODATKI O PROJEKTNI DOKUMENTACIJI

vrsta dokumentacije

PZI v delu, ki se nanaša na pripravljalna dela

številka projekta

397/25

PODATKI O NAČRTU

strokovno področje načrta

2 Načrt s področja gradbeništva

naziv načrta

2.3 Tehnični prikaz armature

številka načrta

119/25

datum izdelave

julij 2025

datum spremembe

PODATKI O PROJEKTANTU NAČRTA

projektant načrta (naziv družbe)

KARLOVŠEK d.o.o., Domžale

naslov

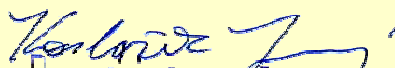
Antona Skoka 7, 1230 Domžale

odgovorna oseba projektanta načrta

Jernej Karlovšek

podpis odgovorne osebe

projektanta načrta


**karlovšek** d.o.o.
Antona Skoka 7, 1230 Domžale

PODATKI O IZDELOVALCU NAČRTA

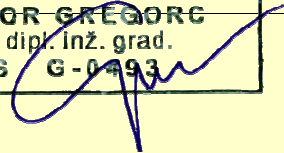
ime in priimek pooblaščenega arhitekta, pooblaščenega inženirja

Gregor Gregorc, univ. dipl. inž. gradb.

identifikacijska številka

G-0493

podpis pooblaščenega arhitekta, pooblaščenega inženirja


GREGOR GREGORC
univ. dipl. inž. gradb.
IZS G-0493

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

PROJEKTANT NAČRTA

projektant načrta (naziv družbe)	KARLOVŠEK d.o.o., Domžale
naslov	Antona Skoka 7, 1230 Domžale
odgovorna oseba projektanta načrta	Jernej Karlovšek

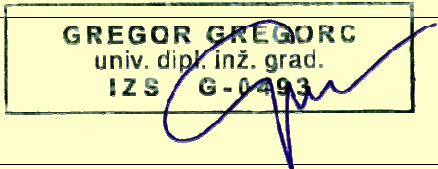
IN POOBLAŠČENI STROKOVNJAK, KI JE IZDELAL NAČRT

pooblaščen strokovnjak	Gregor Gregorc, univ. dipl. inž. gradb.
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IZJAVLJAVA:**da načrt**

vrsta dokumentacije	PZI (projektna dokumentacija za izvedbo gradnje)
strokovno področje načrta	2 Načrt s področja gradbeništva
naziv načrta	2.3 Tehnični prikaz armature
številka načrta	119/25
datum izdelave	julij 2025

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

pooblaščen strokovnjak	Gregor Gregorc, univ. dipl. inž. gradb.
identifikacijska številka	G-0493
podpis pooblaščenega strokovnjaka	 GREGOR GREGORC univ. dipl. inž. gradb. IZS G-0493
odgovorna oseba projektanta načrta	Jernej Karlovšek
podpis odgovorne osebe projektanta načrta	 karlovšek d.o.o. Antona Skoka 7, 1230 Domžale

2.3.2	KAZALO VSEBINE NAČRTA št. 119/25																
2.3.1	Naslovna stran načrta																
2.3.2	Kazalo vsebine načrta																
2.3.3	Tehnično poročilo																
2.3.4	Statični izračun																
2.3.5	Risbe - Tehnični prikaz armature <u>POZICIJSKI NAČRTI</u> list št.: Tloris temeljev P-1 <u>ARMATURNI NAČRTI</u> list št.: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 40px;">- POZ-T3A AB točkovni temelj</td><td style="text-align: right;">1</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T3B AB točkovni temelj</td><td style="text-align: right;">2</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T4 AB točkovni temelj</td><td style="text-align: right;">3</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T5 AB točkovni temelj</td><td style="text-align: right;">4</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T2 AB točkovni temelj</td><td style="text-align: right;">5</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T1 AB točkovni temelj</td><td style="text-align: right;">6</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T0 AB točkovni temelj (tlorisi)</td><td style="text-align: right;">7</td></tr> <tr> <td style="padding-left: 40px;">- POZ-T0 AB točkovni temelj (prerezi)</td><td style="text-align: right;">8</td></tr> </table>	- POZ-T3A AB točkovni temelj	1	- POZ-T3B AB točkovni temelj	2	- POZ-T4 AB točkovni temelj	3	- POZ-T5 AB točkovni temelj	4	- POZ-T2 AB točkovni temelj	5	- POZ-T1 AB točkovni temelj	6	- POZ-T0 AB točkovni temelj (tlorisi)	7	- POZ-T0 AB točkovni temelj (prerezi)	8
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- POZ-T0 AB točkovni temelj (prerezi)	8																
2.3.6	Skupni izvleček armature in kosovnica																

2.3.3	TEHNIČNO POROČILO
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SPLOŠNO

Predmet načrta je temeljenje jeklene konstrukcije za prekritje nove tribune na SZ delu nogometnega stadiona Fazanerija v Murski Soboti (parc. št. 13, k.o. 105 – Murska Sobota).

Jeklena nosilna konstrukcija strehe nad tribunami in VIP prostori je prikazana v načrtu, ki ga je izdelal projektivni biro RAZPON d.o.o., Tehnološki park 20, 1000 Ljubljana.

Nove tribune so masivne armiranobetonske montažne izvedbe po tehnologiji podjetja POMGRAD d.d., Bakovska ulica 31, 9000 Murska Sobota). Konstrukcija in temeljenje tribun je prikazano v načrtu, ki ga je izdelalo podjetje POMGRAD d.d..

Geotehnično mnenje je izdelalo podjetje MBL INŽENIRING d.o.o., Trg Leona Štuklja 5, 2000 Maribor (št.: 72-04/2025, april 2025).

Sestava temeljnih tal na območju gradnje nove tribune je bila povzeta iz geotehničnega poročila, ki ga je pred gradnjo zahodne tribune l. 1981 izdelal ZRMK Ljubljana. Na območju predvidene gradnje sta bila aprila 2025 izvedena še dva dodatna sondažna izkopa globine 3,30m. Na podlagi pridobljenih podatkov je bilo ugotovljeno, da se na območju predvidene gradnje pod vrhnjimi sloji nasutja iz prodno peščenih zemljin in drobljenca nahajajo peščeno meljaste do glinaste in peščene zemljine. Pod peščeno meljastimi oziroma peščenimi zemljinami se v globinah večjih od 1,90m do 2,10 m pojavljajo plasti zameljenih prodno peščenih zemljin slabše zrnatosti, ki z globino praviloma postajajo vse bolj čiste sestave – brez meljastih primesi in gostješe. Računati je potrebno, da se predvsem v vrhnjih slojih prodno peščenih zemljin lokalno še lahko pojavljajo lečaste plasti peščenih pa tudi enozrnatih prodnatih materialov. Po klasifikaciji TSPI - PG.05.202: 2023 se lahko zemljine na obravnavanem območju uvrščajo predvsem med peščene – nizko plastične (SiL) meljaste in peščene – nizko plastične (CIL) glinaste zemljine. Pod plastmi vezljivih zemljin se pojavljajo sloji drobnih meljastih (siSa) in slabše zrnatih (SaP) peskov. Prodno peščene sloje tvorijo zameljene prodno peščene zemljine slabše zrnatosti (siGr) in čistejšje plasti slabše zrnatih prodno peščenih zemljin (GrP). Predvidoma se te plasti nahajajo na globinah večjih od 2,00m pod koto terena.

Podrobnejši opis sestave tal in zahteve za temeljenje so razvidne iz Geotehničnega mnenja.

TEMELJENJE JEKLENE KONSTRUKCIJE

Skladno z navodili geomehanika mora dno izkopov za temelje po celotni površini segati v nosilna raščena tla enake sestave in kvalitete, to je do prodno peščenih zemljin. Vse slabo nosilne zemljine (zameljene, zaglinjene plasti ali organske plasti) ali neenakomerne in nehomogene obstoječe nasipe je potrebno odstraniti in izkope ustrezno poglobiti.

Z ozirom na ugotovljeno sestavo tal in na zahtevo geomehanika je potrebno pod vsemi temelji izvesti zamenjavo (sanacijo) tal z utrjenim tamponskim nasipom iz kamnitega materiala. Debelina nasipa se prilagodi na mestu samem z ozirom na razmere pri izkopu tal glede na projektirano globino novih temeljev. Pri določanju potrebne debeline in izvedbi tamponske blazine oziroma nasipa se upoštevajo vse zahteve geomehanika. Pred vgradnjo nasipa se na dno izkopa po potrebi položi geotekstil z ustrezno natezno trdnostjo (določi geomehanik). Nasip mora biti izdelan iz atestiranega kamnitega agregata in ustrezne granulacije. Izkop za blazino-nasip mora biti na dnu širši od konture temeljev na vse strani vsaj za debelino nasipa. Nasip mora biti dobro strojno utrjen, zato se vgrajevanje nasipa izvaja v plasteh po 25cm do 30cm in sproti strojno utrjuje do zahtevane zbitosti v odvisnosti od debeline izvedenega nasipa in skladno z zahtevami in navodili geomehanika oziroma minimalno $E_{vd} > 40 \text{ MPa}$. Pri tem je potrebno izvajati sprotno kontrolo zgoščenosti (stisljivosti) z meritvami po t.i. švicarski metodi (s krožno ploščo).

Izkop in sanacijo tal mora nadzorovati geomehanik, ki bo na mestu samem podal vse dodatne zahteve za pravilno pripravo temeljnih tal in izvedbo temeljev!

Na celotnem območju objekta je potrebno poskrbeti za kvalitetno odvodnjavanje meteorne vode.

Nosilna konstrukcija objekta je temeljena plitvo na arm.bet. točkovnih oziroma pasovnih temeljih, ki v posameznih oseh podpirajo po dva ali tri stebre. Samo v osi Gj-0/Gj-A točkovni temelj podpira samo en steber. Dno temeljev v oseh Gj-6 do Gj-9 je na globini -2,39m oziroma na absolutni koti 189,26m, v ostalih oseh Gj-0 do Gj-5 je dno temeljev na koti -1,74m oziroma na absolutni koti 189,91m. Temelji so dimenzionirani skladno z geomehanskim mnenjem. Dimenzije posameznih temeljev so določene v statičnem izračunu in so razvidne iz načrta.

Sidranje jeklenih stebrov v temelje se izvede skladno z načrtom in po navodilih projektanta jeklene konstrukcije!

Temeljenje jeklene konstrukcije strehe tribun je neodvisno od konstrukcije novih arm.bet. tribun, razen v Gj-6/Gj-D(Gb-A), kjer temelj poleg dveh jeklenih stebrov podpira tudi arm.bet. steber tribune. Arm.bet. steber se v temelj vgradi po navodilih proizvajalca – POMGRAD d.d..

V osi Gj-1 dva stebra nove jeklene konstrukcije nalegata na obstoječ arm.bet. temelj. Obstoječ temelj se sanira oziroma dodatno utrdi tako, da se enostransko razširi - dobetonira proti osi Gj-2 in podaljša - dobetonira v smeri proti osi Gj-A ta toliko, da se podpre še nov jeklen steber v tej osi. Poleg tega se dobetonira v višino za 20cm. Ta temelj se poveže tudi z novim temeljem v osi Gj-C, ki je izveden ob obstoječem objektu. Točna globina obstoječih temeljev ni poznana, zato je potrebno obstoječe temelje na stiku z novim temeljem ustrezno podbetonirati v izmeničnih kampadah do globine novega temelja.

Pred izvedbo dobetoniranja obstoječega temelja je potrebno vse stične površine ustrezno očistiti in narahpaviti. Sidranje v obstoječ temelj se izvede z uvrtnimi in kemično lepljenimi sidri iz rebrastega gradbenega jekla (RA). Za lepilo se uporabi Hilti masa (HIT-HY200-R); pri vgradnji je potrebno upoštevati vsa navodila proizvajalca! Pri vrtnanju vrtin za vgradnjo sicer se obstoječa vgrajena armatura v temeljih ne sme poškodovati! Za montažo novih dveh stebrov je potrebno lokalno odstraniti del obstoječega betonskega nastavka (cca. 5cm), vgrajena armatura naj pri tem ostane nepoškodovana. Po montaži jeklenega stebra naj se obstoječ nastavek ponovno dobetonira ali obbetonira. Rušenje obstoječega temelja ni dopustno!

Skozi temelje v oseh Gj-2 do Gj-5 je predvidena odprtina za prehod kanalizacijske cevi. Temelja v osi Gj-1 se ne sme oslabiti z odprtinami za prehod kanalizacije ali inštalacij! Razvod kanalizacije ali drugih inštalacij je potrebno ustrezno prilagoditi.

OBTEŽBE in IZRAČUN

Pri dimenzioniranju temeljev so upoštevani vplivi (akcije), ki jih je podal projektant jeklene nosilne konstrukcije (reakcije jeklene konstrukcije po statičnem izračunu RAZPON d.o.o., pooblaščen inženir mag. Igor Gorup u.d.i.g).

Pri dimenzioniranju skupnega temelja POZ-T3B za arm.bet. steber tribun in jeklenih stebrov strehe, so upoštevani dodatni vplivi (akcije), ki jih je podal projektant arm.bet. nosilne konstrukcije tribun (POMGRAD d.d., pooblaščen inženir Jure Tikvič u.d.i.g).

Izračun je izdelan s pomočjo računalniških programov »Frilo« (Nemetschek) in »Tower 3D model builder« (Radimpex).

Izračun nosilnih gradbenih konstrukcij je izdelan po načelih in pravilih Evrokodov, skladno s Pravilnikom o mehanski odpornosti in stabilnosti objektov (U.I.RS št.:101/2005).

UPORABLJENI MATERIALI

Vsi vgrajeni materiali morajo biti opremljeni s potrdili o kvaliteti v skladu z zakonom o standardizaciji.

Temelji se izdelajo iz betona trdnosti C25/30-XC2 (skladno s SIST EN 206-1 in SIST 1026).

Za armiranje je uporabljena rebrasta armatura kvalitete S500-B (skladno s SIST EN 10080).

ZAHTEVE PRI IZVEDBI

Razred izvedbe je EXC2.

Vse nosilne gradbene konstrukcije je potrebno izvesti po PZI dokumentaciji.

Vsi izkopi v tleh naj se izvajajo v suhem vremenu. Izkop in priprava tal (odstranitev neustreznih plasti zemljine in izvedba tamponskih nasipov) pred izvedbo temeljev mora potekati pod stalnim nadzorom geomehanika, ki mora pregledati vse izkope in predpisati vsa potrebna dodatna navodila in ukrepe, ki so potrebni za pravilno pripravo tal in izvedbo temeljenja. Kontrolo zgoščenosti (stisljivosti) tamponskih nasipov pod temelji je potrebno izvajati z meritvami po t.i. švicarski metodi (s krožno ploščo). Vse ugotovitve in meritve geomehanika morajo biti vpisane v gradbeni dnevnik.

V primeru bistvenih odstopanj od predpostavk upoštevanih v projektu je potrebno obvestiti odgovornega projektanta statike !

Za arm.bet. konstrukcije je izvajalec dolžan izdelati projekt betona / projekt izvajanja betonskih konstrukcij (z vsemi ustreznimi recepturami za betone) s programom zagotovitve kakovosti za betonska dela (proizvodnja, dodatki, vgrajevanje, kontrolne preiskave, transport, nega in zaščita betona). Posebno pozornost je potrebno posvetiti vgradnji in negi betona pri nizkih in visokih temperaturah.

Armatura mora biti pred vgradnjo očiščena vse umazanije in rje, ki se lušči z armature. Pri polaganju armature je potrebno upoštevati minimalne odmike – zaščitne plasti betona, sidrne dolžine, preklope in vse ostale zahteve za vgrajevanje armature in betona po veljavnih predpisih (SIST EN 1992-1-1).

Vse delovne prekinitve pri betoniranju morajo biti dogovorjene z odgovornim projektantom gradbenih konstrukcij (statikom).

Vse stike med novimi (dobetoniranimi) in obstoječimi betonskimi površinami je potrebno nahrapaviti – poštokati, očistiti z vodnim curkom in premazati z ustreznim polimernim disperzijskim premazom »staro-novo« (npr. Kemalutex).

Pred montažo nove jeklene strešne konstrukcije na območju med osmi Gj-5 do Gj-9 je potrebno na temelje nasuti minimalno 0,60m utrjenega kamnitega materiala ali zemljine !

Sidranje jeklene konstrukcije (stebrov) v temelje se izvede skladno z načrtom in po navodilih projektanta jeklene konstrukcije (RAZPON d.o.o.) !

Pri vgradnji sider in armaturnih palic v obstoječe arm.bet. konstrukcije je potrebno dosledno upoštevati zahteve in navodila proizvajalca sider oziroma sidrne malte!

Pred vgradnjo sider je potrebno preveriti vgrajeno armaturo v obstoječih temeljih. Pri vgradnji novih sider se obstoječa armatura ne sme poškodovati !

Vsa dela pri gradnji objekta mora izvajati ustrezno strokovno usposobljeno podjetje z izkušnjami za tovrstno gradnjo.

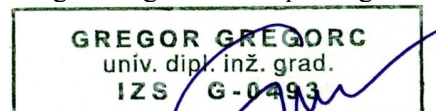
Nadzor nad izvajanjem mora opravljati inženir, ki izpolnjuje zahteve in pogoje navedene v GZ in z ustreznimi izkušnjami pri gradnji tovrstnih objektov.

Za vsako spremembo je potrebno pridobiti pisno soglasje projektanta in strokovnega nadzora.

Vse nejasnosti in spremembe je potrebno reševati s pooblaščenim inženirjem!

Domžale, julij 2025

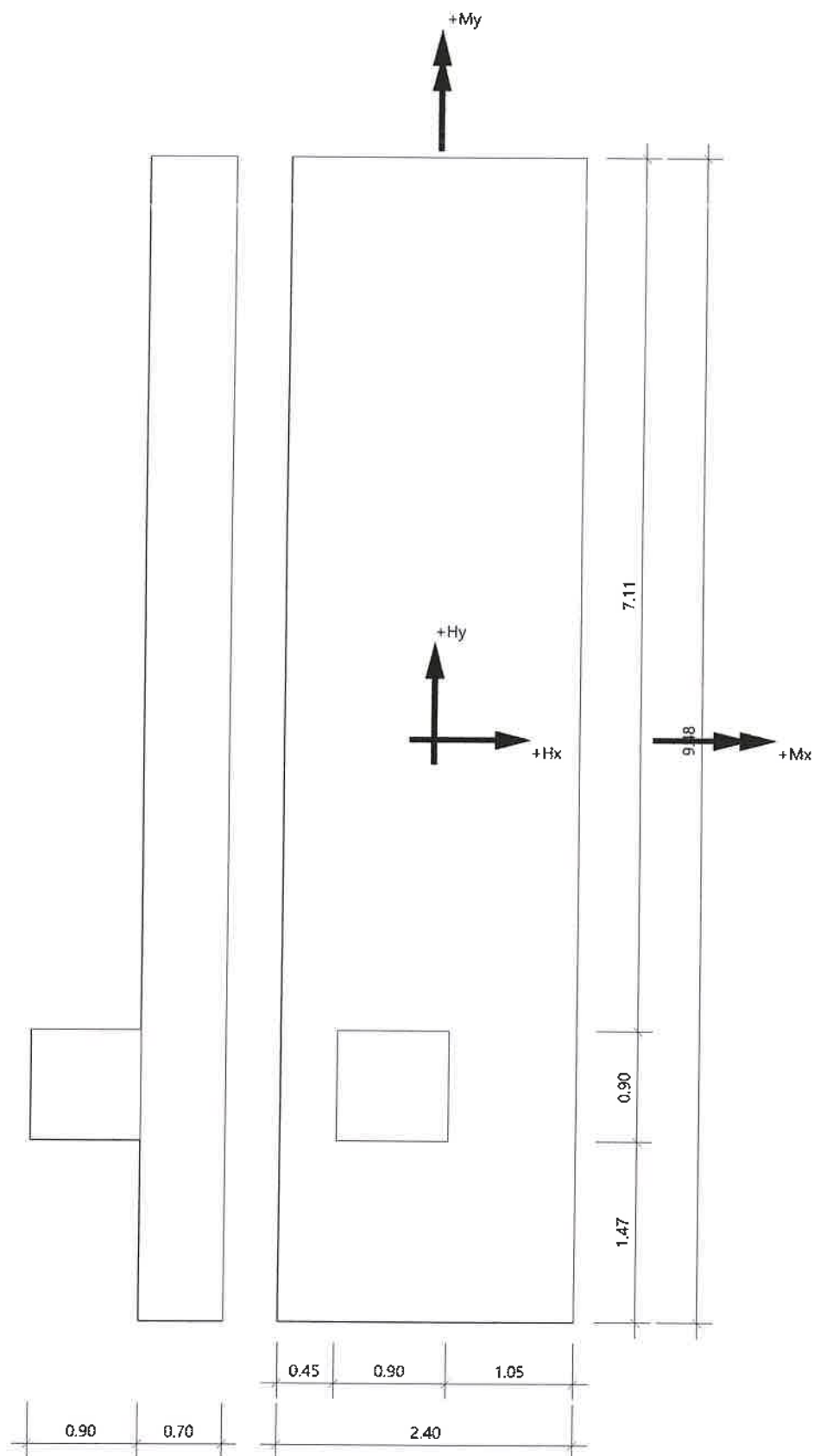
Pooblaščen inženir:
Gregor Gregorc univ.dipl.inž.grad.

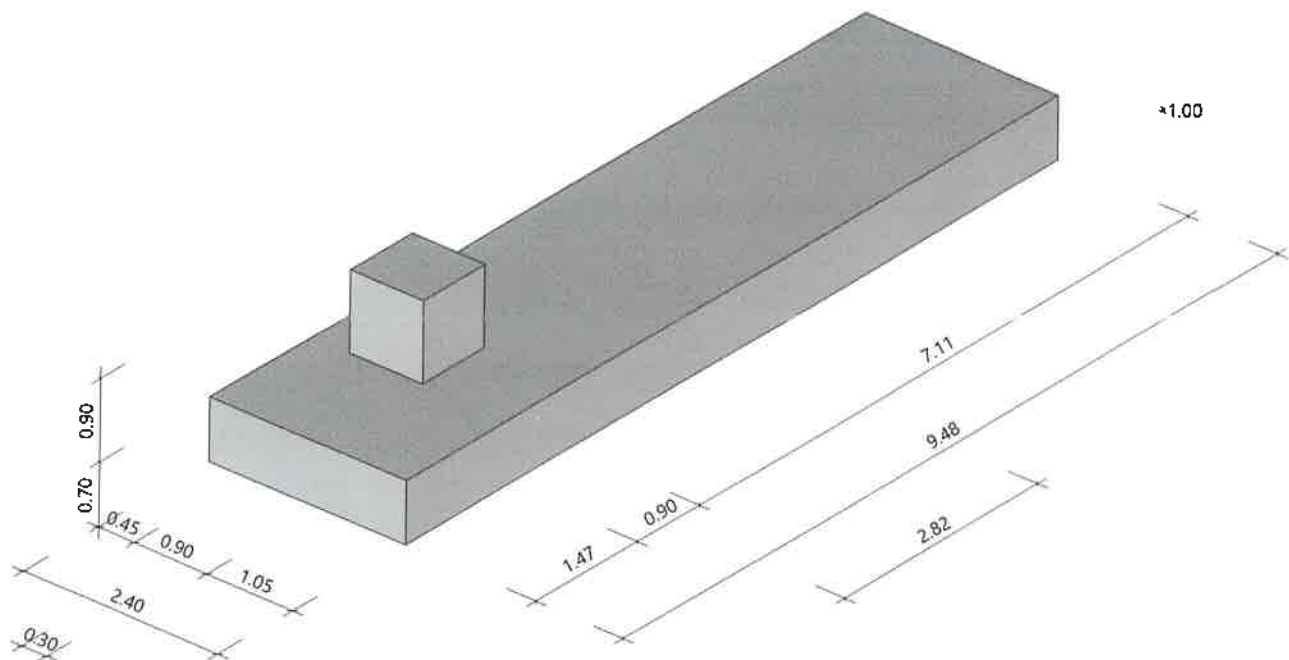


2.3.4	STATIČNI IZRAČUN
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Position: T-0_v3 Temelj štirih stebrov (v.24, 25, 26 in 27)

Isolated Foundation (x64) FD+ 02/2025B (FRILO R-2025-2/P03)

System**Plan view**

Isometric

Foundation acc. to EN 1992-1-1:2004/A1:2014 and EN 1997-1:2004/AC:2009

Member

Member	Concrete	Steel	Width (x) m	Width (y) m	Height (z) m
Foundation	C 25/30	B 500(B)	2.40	9.48	0.70
Column	C 25/30	B 500(B)	0.90	0.90	0.90

Eccentricity $e_x = -0.30\text{m}$. Eccentricity $e_y = -2.82\text{m}$. Embedment depth of the foundation in the subsoil 1.00 m. Without groundwater Design value of the bearing pressure resistance $\sigma_{R,d} = 430.77 \text{ kN/m}^2$.

Characteristic values**Durability****Requirements durability:**

attack on concrete	X0
reinforc. corrosion	XC2
min. concrete class	C 25/30
Stirrup	$d_{s,b} = 16 \text{ mm}$
long. reinforcement	$d_{s,l} = 16 \text{ mm}$
allowance in design	$\Delta C_{dev} = 10 \text{ mm}$
Stirrup	$c_{min,l} = 25 \text{ mm}$
concrete coverage	$c_{nom,l} = 35 \text{ mm}$
longitudinal bars	$c_{min,m} = 25 \text{ mm}$
concrete coverage	$c_{nom,m} = 51 \text{ mm}$ *1
laying dist. link	$c_l = 35 \text{ mm}$
all. crack width	$w_{max} = 0.30 \text{ mm}$

*1: with $c_{min,l}$

Loads**Column loads - Design values**

No.	Description	N kN	M _{xI} kNm	M _{xII} kNm	M _{yI} kNm	M _{yII} kNm	H _{xI} kN	H _{xII} kN	H _{yI} kN	H _{yII} kN	Red N ¹	Red M ¹	DS ²	LS
1	RC11-maxPz (CO33)	894.8	101.10	101.10	55.70	55.70	23.7	23.7	-22.9	-22.9	1.40	1.40	DST	EQU
2	minPz v.26 (CO42)	846.0	154.60	154.60	52.40	52.40	16.3	16.3	-33.1	-33.1	1.40	1.40	DST	STR
3	RC11-minPz (CO116)	-217.3	-193.40	-193.40	72.90	72.90	33.3	33.3	45.0	45.0	1.40	1.40	DST	STR
4	RC11-maxMx (CO55)	86.1	-246.60	-246.60	24.50	24.50	9.7	9.7	53.6	53.6	1.40	1.40	DST	STR
5	RC11-minMx (CO126)	618.2	224.20	224.20	61.00	61.00	19.0	19.0	-51.2	-51.2	1.40	1.40	DST	STR
6	3 Stalna-G	195.0	-2.20	-2.20	12.50	12.50	5.4	5.4	-1.1	-1.1	1.00	1.00	DSP	SLS
7	RC12-SLS (CO169)	620.0	56.70	56.70	52.60	52.60	18.7	18.7	-14.1	-14.1	1.00	1.00	DSP	SLS
8	RC12- minPz v.26 (CO178)	578.3	107.30	107.30	45.60	45.60	14.7	14.7	-23.7	-23.7	1.00	1.00	DSP	STR

1 : Reduction factors N for vertical loads and MH for moments and horizontal loads, used for generating missing limit states.
 2 : DS: design situation P: Permanent A: accidental E: Earthquake T: transient
 3 : only permanent loads

If a load case is not available in the required limit state for a verification, a load case with the same designation and required limit state is used. If there is no corresponding load case, a load case is generated using the reduction factors. Self-weight is taken into account in the calculation. Density Concrete : $\gamma = 25.00 \text{ kN/m}^3$. Total Foundation with socket or column $16.655 \text{ m}^3 / 416.39 \text{ kN}$. Horizontal loads act on the upper edge of the base or the column. Torsion from horizontal loads is not considered.

charakteristische Schnittgrößen in der Sohlfluge

LC No.	Description	V kN	ex m	My kNm	ey m	Mx kNm	Hx kN	Hy kN
1	Th.1.O.	1413.5	0.02	30.52	-1.75	-2468.28	23.7	-22.9
1	Th.2.O.	1413.5	0.02	30.52	-1.75	-2468.28	23.7	-22.9
2	Th.1.O.	999.9	0.04	35.27	-1.93	-1930.47	11.6	-23.6
2	Th.2.O.	999.9	0.04	35.27	-1.93	-1930.47	11.6	-23.6
3	Th.1.O.	613.5	0.25	153.19	1.23	753.84	23.8	32.1
3	Th.2.O.	613.5	0.25	153.19	1.23	753.84	23.8	32.1
4	Th.1.O.	884.5	0.06	56.38	0.44	391.42	6.9	38.3
4	Th.2.O.	884.5	0.06	56.38	0.44	391.42	6.9	38.3
5	Th.1.O.	975.5	0.08	77.54	-1.50	-1463.86	13.6	-36.6
5	Th.2.O.	975.5	0.08	77.54	-1.50	-1463.86	13.6	-36.6
6	Th.1.O.	856.4	0.03	29.02	-0.44	-379.24	5.4	-1.1
6	Th.2.O.	856.4	0.03	29.02	-0.44	-379.24	5.4	-1.1
7	Th.1.O.	1124.6	0.03	32.14	-1.49	-1672.84	18.7	-14.1
7	Th.2.O.	1124.6	0.03	32.14	-1.49	-1672.84	18.7	-14.1
8	Th.1.O.	1001.7	0.06	57.86	-1.85	-1849.10	14.7	-23.7
8	Th.2.O.	1001.7	0.06	57.86	-1.85	-1849.10	14.7	-23.7

Single loads

No.	Considered in load case	N kN	Action	ax m	ay m
1	1	-323.9	design value	-0.30	0.04
2	1	146.7	design value	0.30	-2.82
3	1	53.3	design value	0.30	0.04
4	1	178.8	design value	0.30	3.74
5	2	-401.8	design value	-0.30	0.04
6	2	189.4	design value	0.30	-2.82
7	2	46.7	design value	0.30	0.04
8	2	136.6	design value	0.30	3.74
9	3	171.7	design value	-0.30	0.04
10	3	35.3	design value	0.30	-2.82
11	3	149.1	design value	0.30	0.04
12	3	89.8	design value	0.30	3.74
13	4	140.3	design value	-0.30	0.04
14	4	44.5	design value	0.30	-2.82
15	4	165.0	design value	0.30	0.04
16	4	172.1	design value	0.30	3.74
17	5	-291.9	design value	-0.30	0.04
18	5	169.1	design value	0.30	-2.82
19	5	91.0	design value	0.30	0.04
20	5	148.9	design value	0.30	3.74

No.	Considered in load case	N kN	Action	ax m	ay m
21	6	-14.8	ständig	-0.30	0.04
22	6	54.3	ständig	0.30	-2.82
23	6	70.8	ständig	0.30	0.04
24	6	99.6	ständig	0.30	3.74
25	7	-208.6	ständig	-0.30	0.04
26	7	95.4	ständig	0.30	-2.82
27	7	37.4	ständig	0.30	0.04
28	7	128.9	ständig	0.30	3.74
29	8	-276.0	ständig	-0.30	0.04
30	8	138.6	ständig	0.30	-2.82
31	8	43.2	ständig	0.30	0.04
32	8	101.2	ständig	0.30	3.74

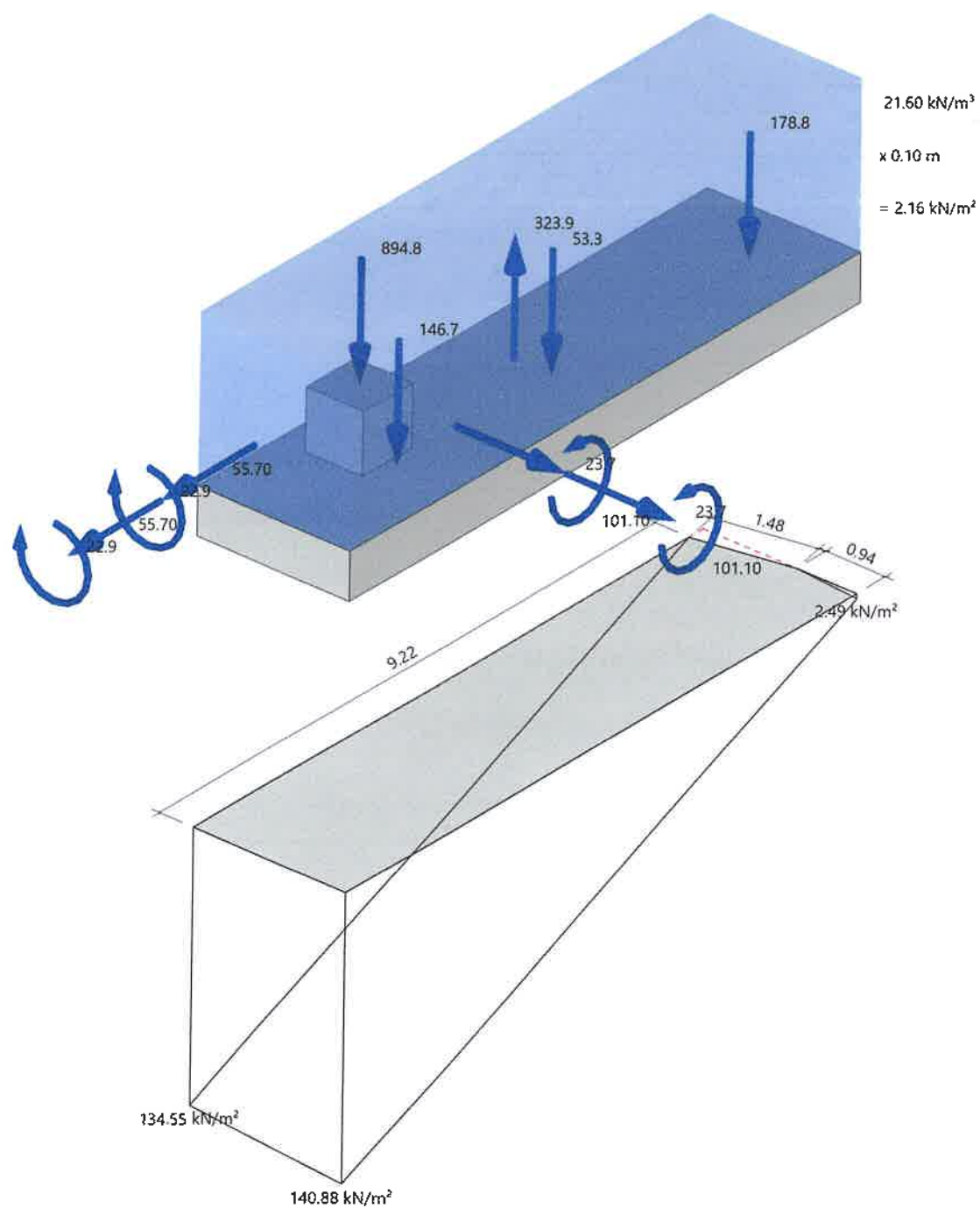
Area Loads

No.	Considered in load case	Action	h _E m	γ _E kN/m ³	q kN/m ²	R kN
1	1, 3, 4, 5	design value	0.10	21.60	0.00	49.1 ¹
2	6, 7	design value	0.10	16.00	0.00	36.4 ¹

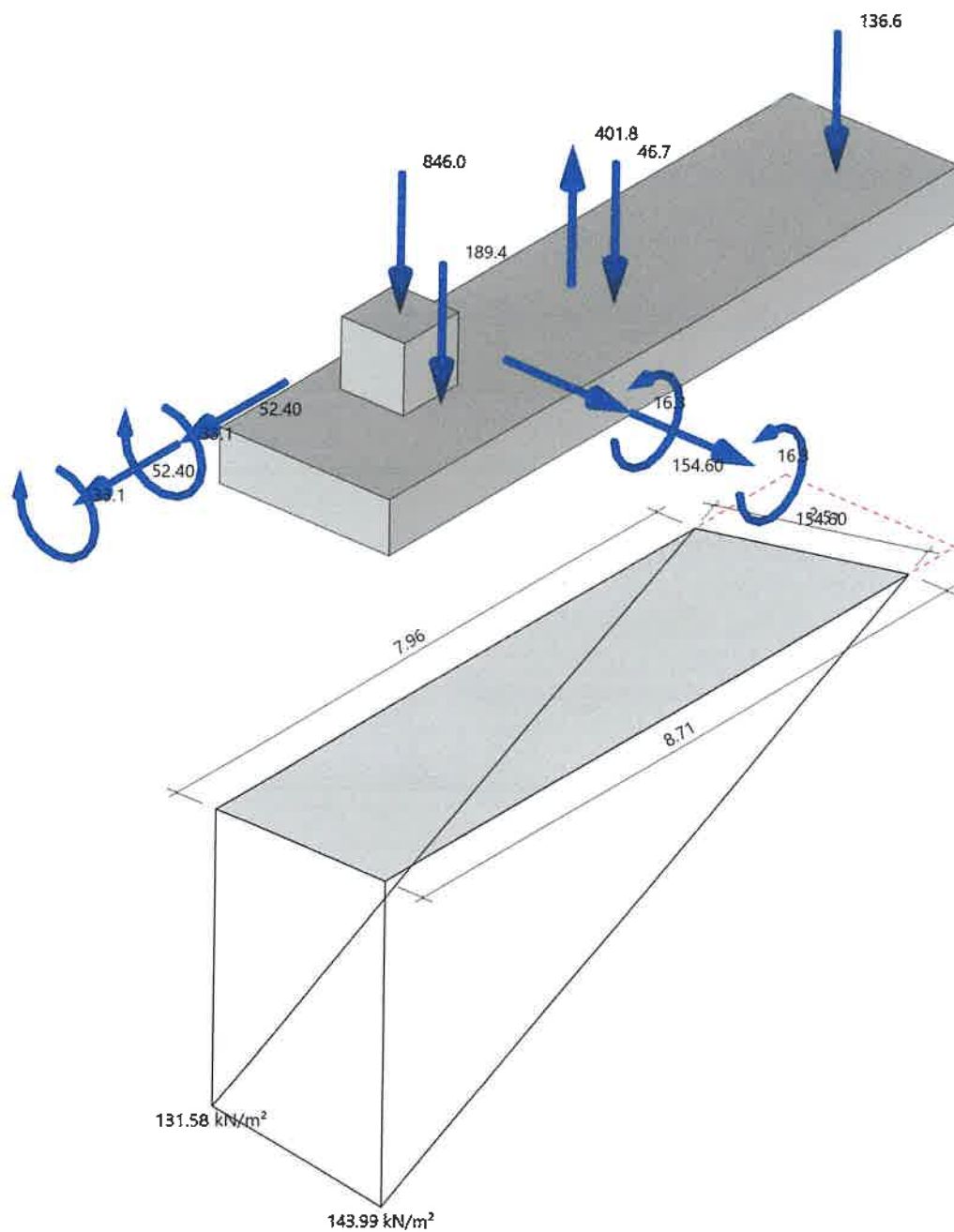
1 : Gross value. During the design, this load is reduced by the sleeve or column.

Load case graphics

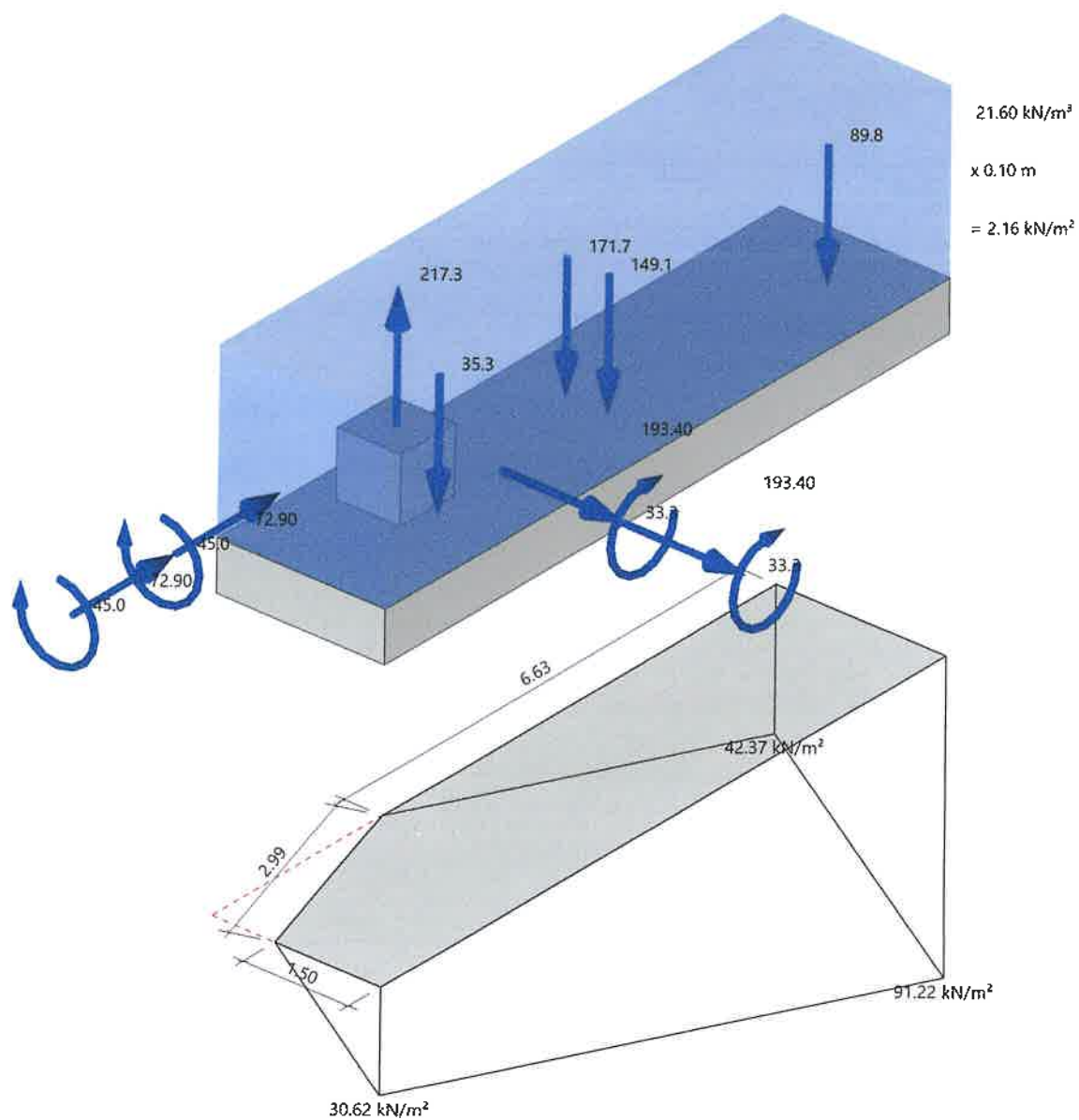
Load case 1 - RC11-maxPz (C033) -



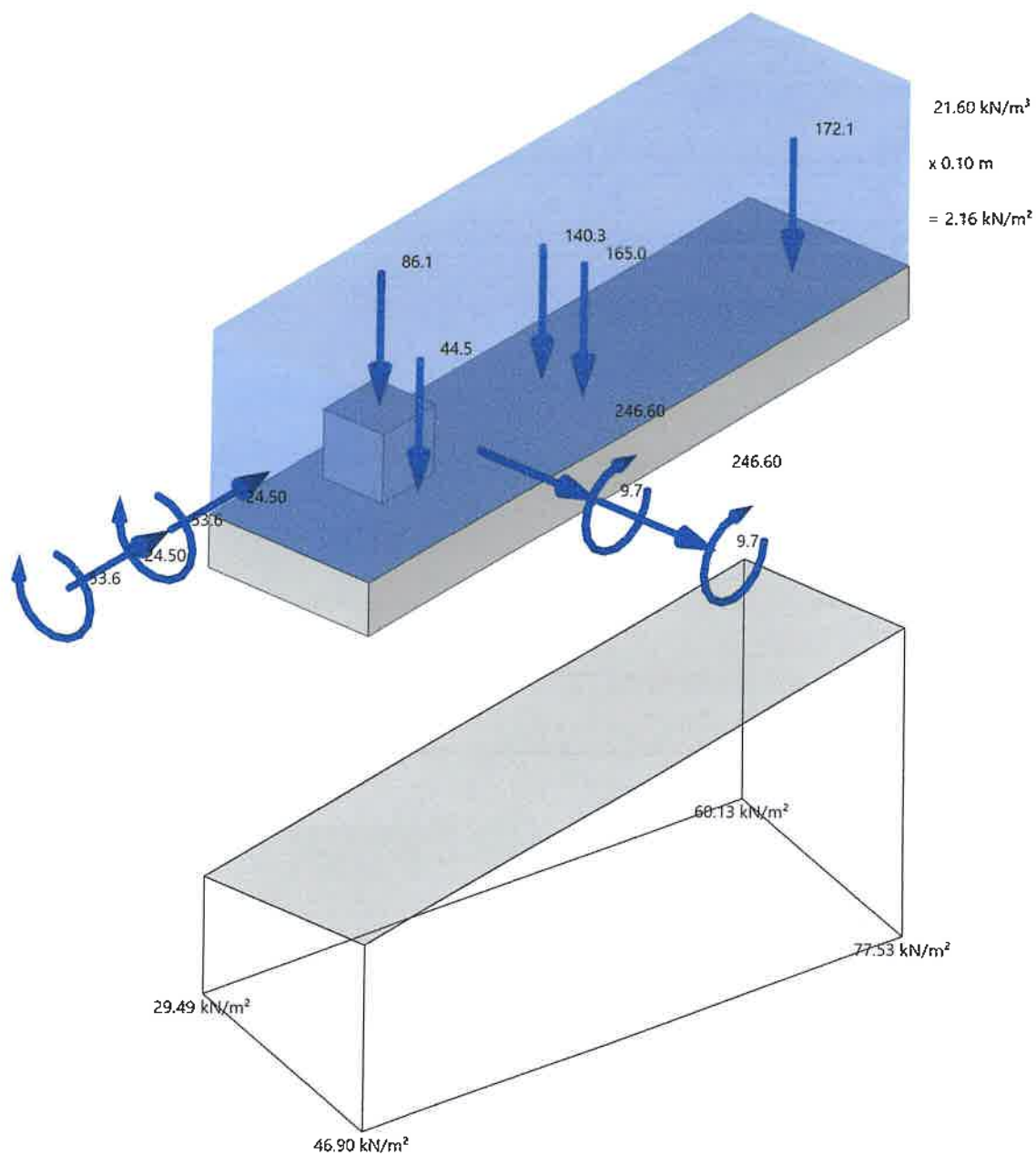
Load case 2 - minPz v.26 (C042) -



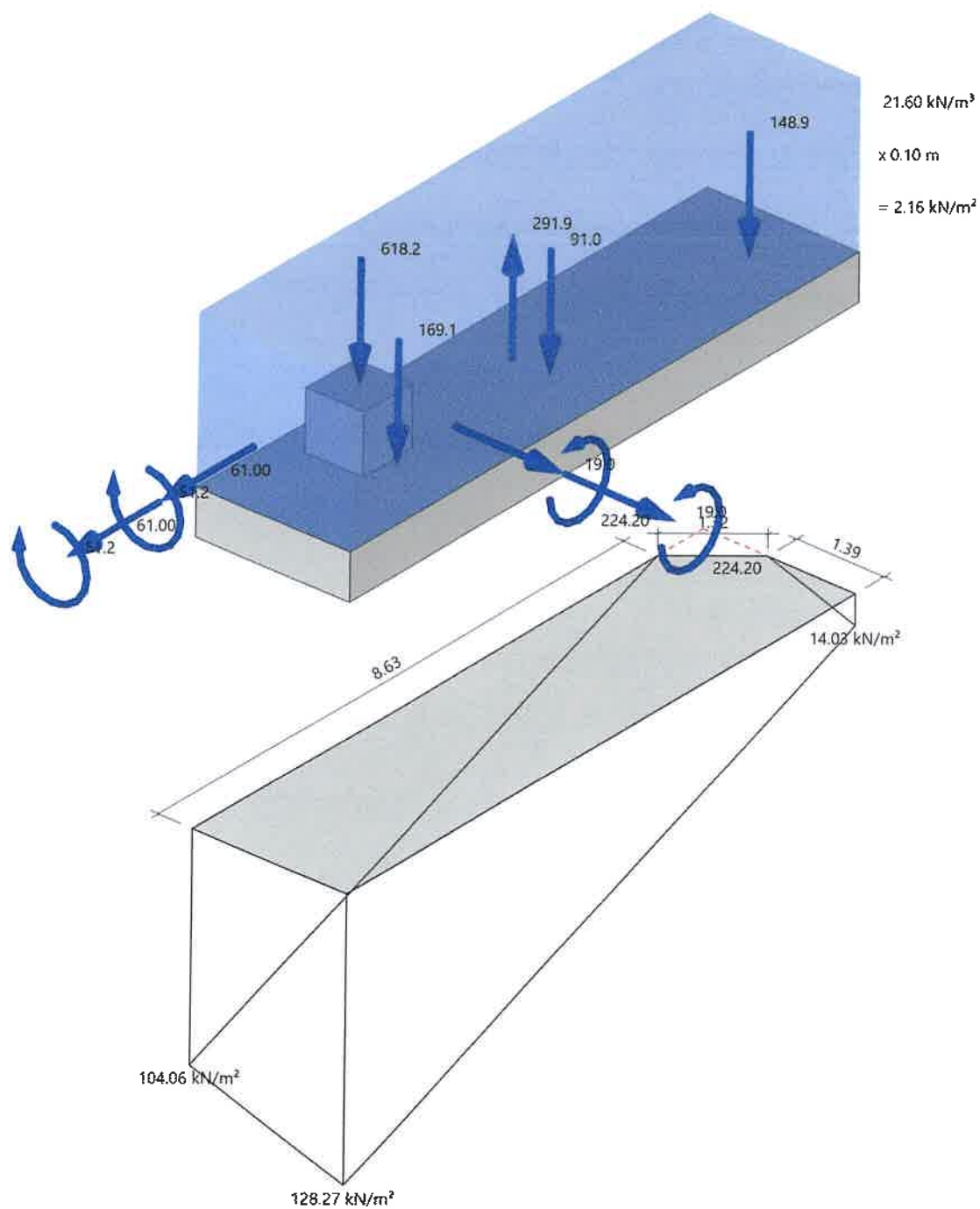
Load case 3 - RC11-minPz (CO116) -



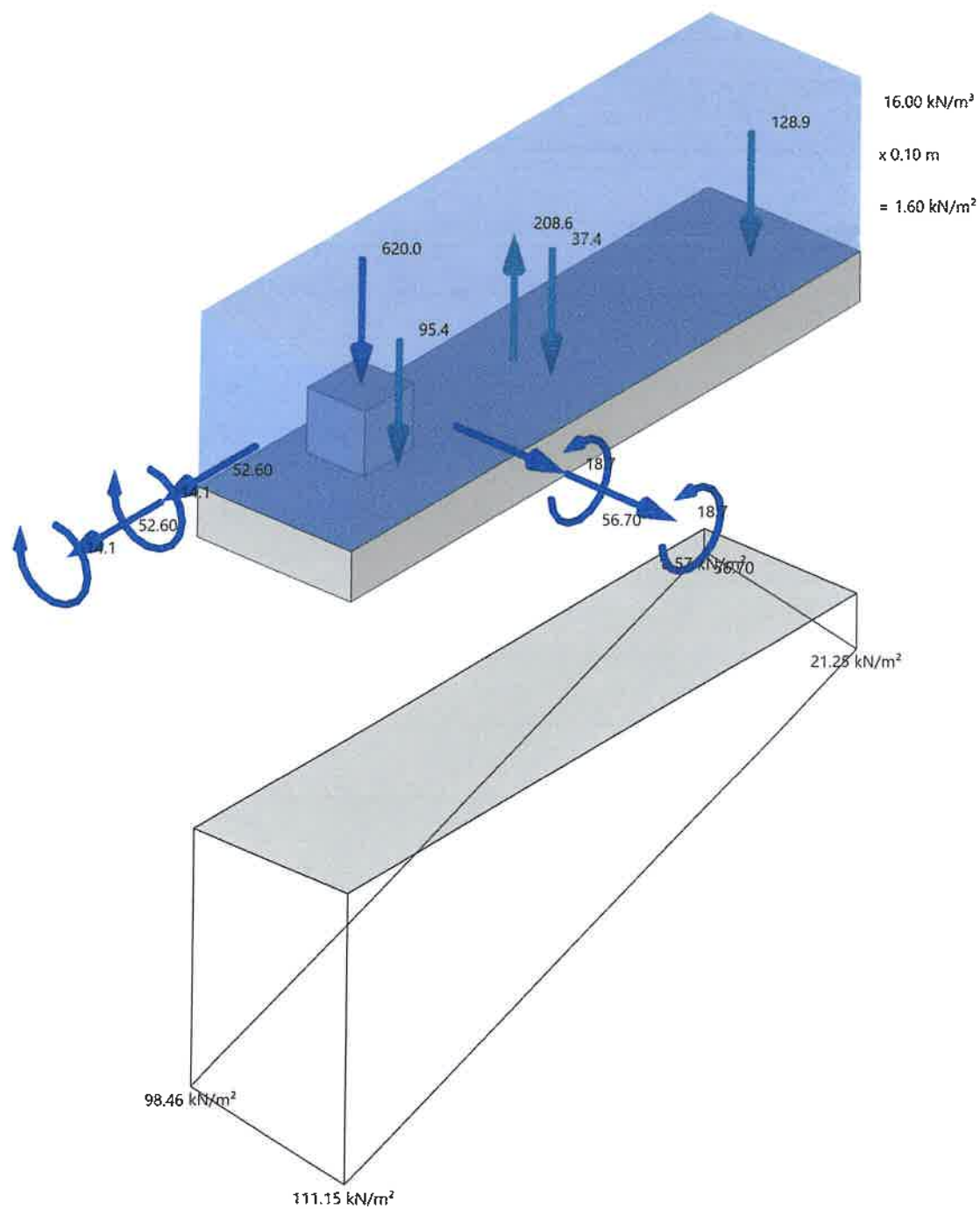
Load case 4 - RC11-maxMx(CO55) -



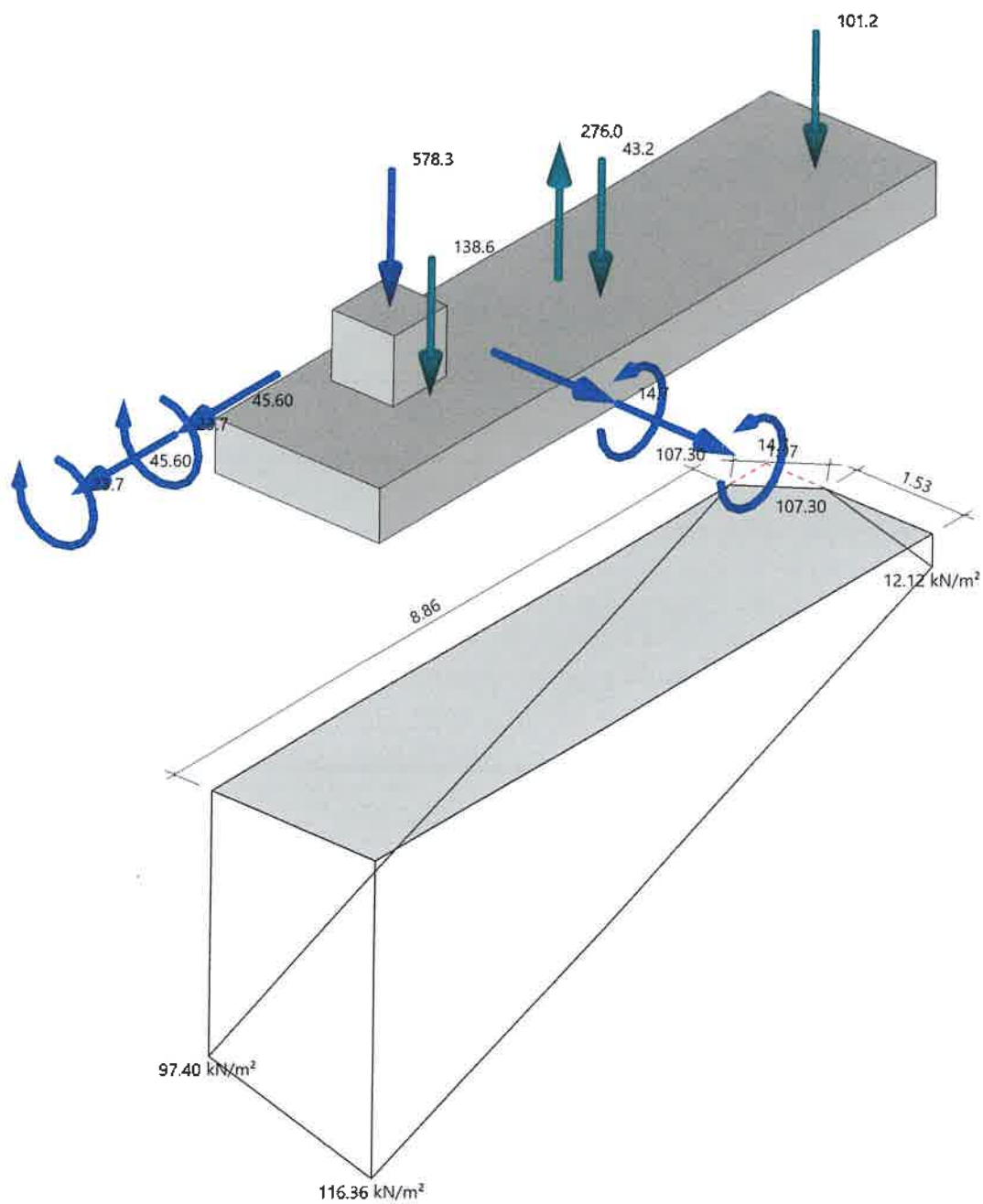
Load case 5 - RC11-minMx (CO126) -



Load case 7 - RC12-SLS (CO169) -



Load case 8 - RC12- minPz v.26 (CO178) -



Results

Preview Checks

Check	Load case I	η_I	Load case II	η_{II}
Gaping joint only permanent loads ULS	6 ¹	0.39	6 ¹	0.03
Gaping joint permanent and variable loads ULS	2 ¹	0.51	2 ¹	0.51
Gaping joint only permanent loads SLS characteristic	6 ¹	0.36	6 ¹	0.02
Gaping joint permanent and variable loads SLS characteristic	2 ¹	0.38	2 ¹	0.38
Stability	3 ¹	0.49	3 ¹	0.49
Uplift check	2 ¹	0.25	2 ¹	0.25
Simplified method ULS	2 ¹	0.25	2 ¹	0.27
Inclination of base pressure resultant	3 ¹	0.33	3 ¹	0.33
Punching shear $V_{Ed}/V_{Rd,c}$			2	0.37
Punching shear $V_{Ed}/V_{Rd,max}$			2	0.18

1 : Or corresponding load case with the same designation.

Preview Reinforcement

Type	Load case	cm2
Bending $AS_{x,u}$	2 ¹	81.0
Bending $AS_{y,u}$	3 ¹	20.5
Bending $AS_{x,o}$	4 ¹	82.4
Bending $AS_{y,o}$	4 ¹	53.6

1 : Or corresponding load case with the same designation.

The inclination of the characteristic or representative base pressure resultant First order effects

$\tan \delta = H/V = 0.07 \leq 0.20$

The inclination of the characteristic or representative base pressure resultant makes the simplified check possible.

Design value of the bearing pressure resistance $\sigma_{R,d} = 400.00 \text{ kN/m}^2$

$\sigma_{R,d} = 430.77 \text{ kN/m}^2$. The design value of bearing pressure resistance has been specified directly. Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = \{107.7\% \}$.

Simplified method Resulting Load Case

No.	LS	DS	N_d kN	R_d kN	a' m	b' m	σ_d kN/m2	σ_{Rd} kN/m2	η
2 _I	GEO	T	1379.0	0.0	2.33	5.56	106.46	430.77	1 0.25
2 _{II}	GEO	T	1379.0	0.0	2.32	5.13	116.04	430.77	1 0.27

1 : Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = \{107.7\% \}$

The bearing pressure is influenced by partial safety factors.

Gaping joint

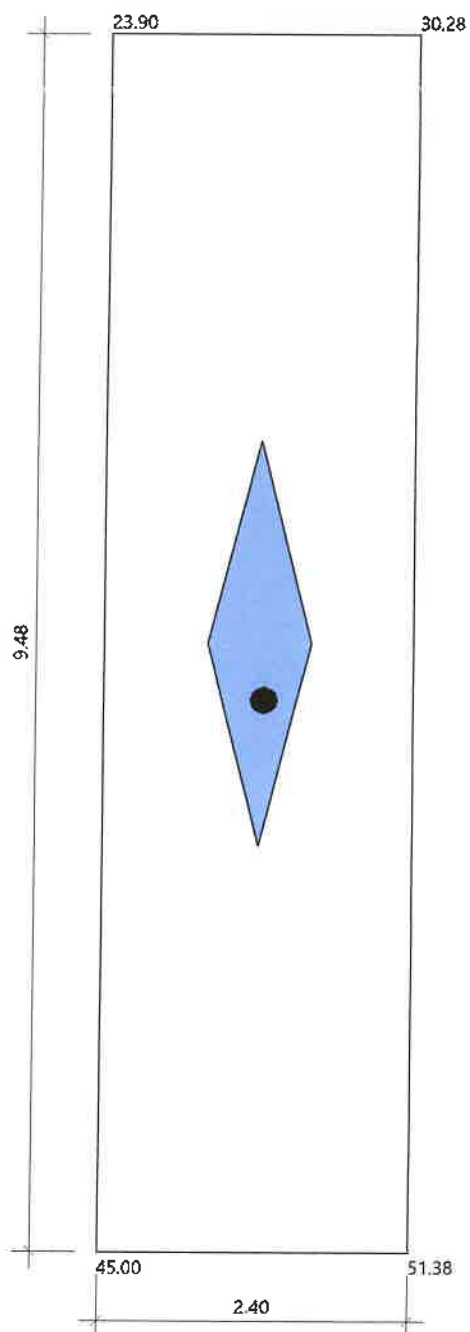
Gaping joint to EN 1997-1:2004/AC:2009 Resulting Load Case First order effects and second order effects

No.	LS	DS	N kN	e_x m	e_y m	$a^*/(1/6)$	$b^*/(1/9)$	η_G	$\eta_{G,Q}$
6 _I	EQU	P	790.8	0.03	-0.50	0.065/0.167	0.003/0.111	0.39	0.03
6 _{II}	EQU	P	790.8	0.03	-0.50				
2 _I	EQU	T	1191.6	0.04	-2.25				
2 _{II}	EQU	T	1191.6	0.04	-2.25				
6 _I	SLS	P	856.4	0.03	-0.44	0.061/0.167	0.002/0.111	0.36	0.51
6 _{II}	SLS	P	856.4	0.03	-0.44				
2 _I	SLS	T	999.9	0.04	-1.93				
2 _{II}	SLS	T	999.9	0.04	-1.93				

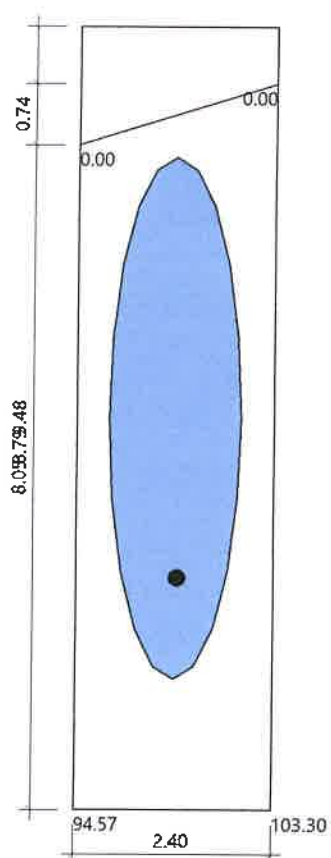
$a^* = e_x/b_x + e_y/b_y$ $b^* = (e_x/b_x)^2 + (e_y/b_y)^2$ $\eta_G = a^*/(1/6)$ $\eta_{GQ} = b^*/(1/9)$

If no relevant characteristic load cases have been defined, the verification of the gaping joint has been reduced to a characteristic level using reduction factors.

Graphic only permanent loads



Graphic permanent and variable loads



Bending

Design Result Load Cases

LC	$M_{y,u,Ed}$ kNm	$M_{x,u,Ed}$ kNm	$M_{y,o,Ed}$ kNm	$M_{x,o,Ed}$ kNm	$A_{s,xu}$ cm ²	$A_{s,yu}$ cm ²	$A_{s,xo}$ cm ²	$A_{s,yo}$ cm ²
2 ¹	144.68	350.17	0.00	-753.62	81.0*	20.5*	0.0	26.6
3	108.25	376.24	0.00	0.00	81.0*	20.5*	0.0	0.0
4	122.82	217.51	-130.59	-1483.37	81.0*	20.5*	82.4*	53.6

*: Minimal reinforcement by EN 1992-1-1:2004/A1:2014 9.2.1.1 (1)

1 : Or corresponding load case with the same designation.

Reinforcement layer Reinforcement in x-direction $d_{1,x} = 5.9$ cm. Reinforcement layer Reinforcement in y-direction $d_{1,y} = 5.9$ cm. Reinforcement layer Reinforcement in x-direction $d_{2,x} = 4.8$ cm. Reinforcement layer Reinforcement in y-direction $d_{2,y} = 4.8$ cm. Rounded bending moment from the axis of the column. 20% transverse reinforcement was taken into account.

Minimum reinforcement to ensure shear capacity acc.to EN 1992:2014 NCI 6.4.5

Min. moments	$M_{y,min} = \eta_x * V_{Ed} * b_{eff,y}$	=	$0.500 * 994.5 * 3.34$	=	1658.73 kNm
Min. reinforcement	$A_{s,x,min} =$	=		=	58.3 cm ²
Min. moments	$M_{x,min} = \eta_y * V_{Ed} * b_{eff,x}$	=	$0.500 * 994.5 * 2.40$	=	1193.40 kNm
Min. reinforcement	$A_{s,y,min} =$	=		=	41.9 cm ²

Reinforcement in x-direction bottom (m,cm²)

from	-474.0	-237.0	237.0
to	-237.0	237.0	474.0
Width	237.0	474.0	237.0
	22Ø16/10.0	32Ø16/15.0	22Ø16/10.0
req. As	41.6	61.9	20.3
exist.As	44.6	63.5	44.6
req.as/m	17.6	13.1	8.5
exist.as/m	18.8	13.4	18.8

Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm

Reinforcement in y-direction bottom (m,cm²)

from	-120.0	-60.0	60.0
to	-60.0	60.0	120.0
Width	60.0	120.0	60.0
	4Ø20/15.0	8Ø20/15.0	4Ø20/15.0
req. As	10.5	21.1	7.8
exist.As	12.6	25.1	12.6
req.as/m	17.6	17.6	13.1
exist.as/m	20.9	20.9	20.9

Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm

Reinforcement in x-direction top (m,cm²)

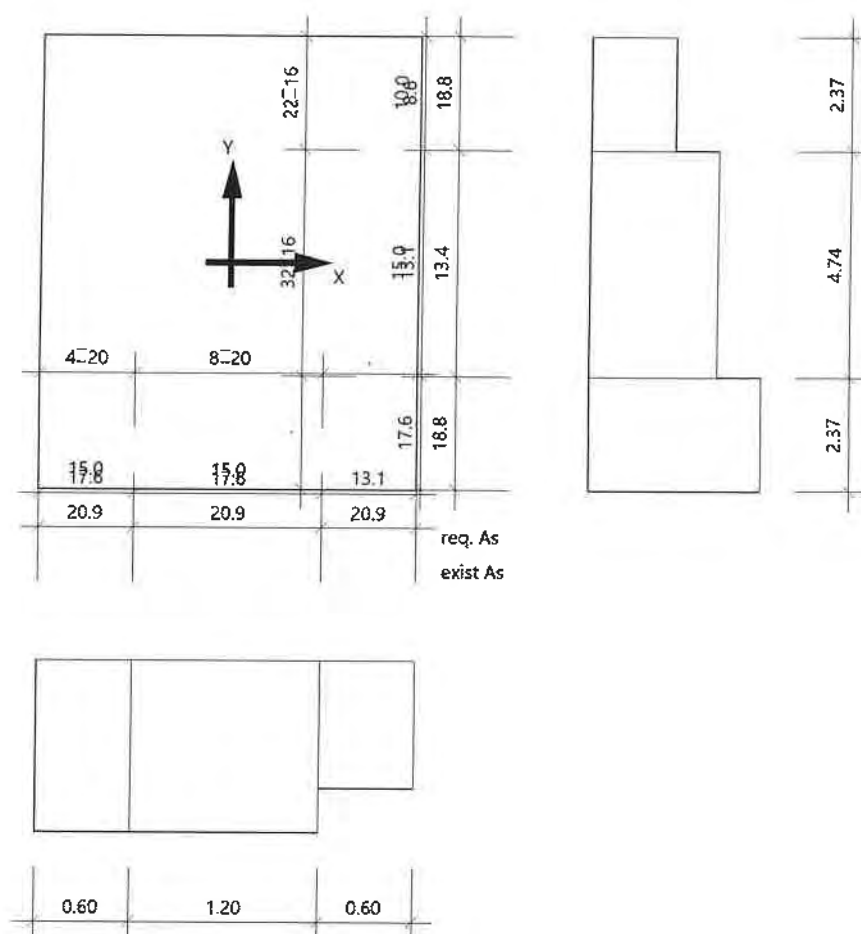
from	-474.0	
to	474.0	
Width	948.0	
	60Ø16/15.0	
req. As	82.5	
exist.As	120.6	
req.as/m	8.7	
exist.as/m	12.7	

Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm

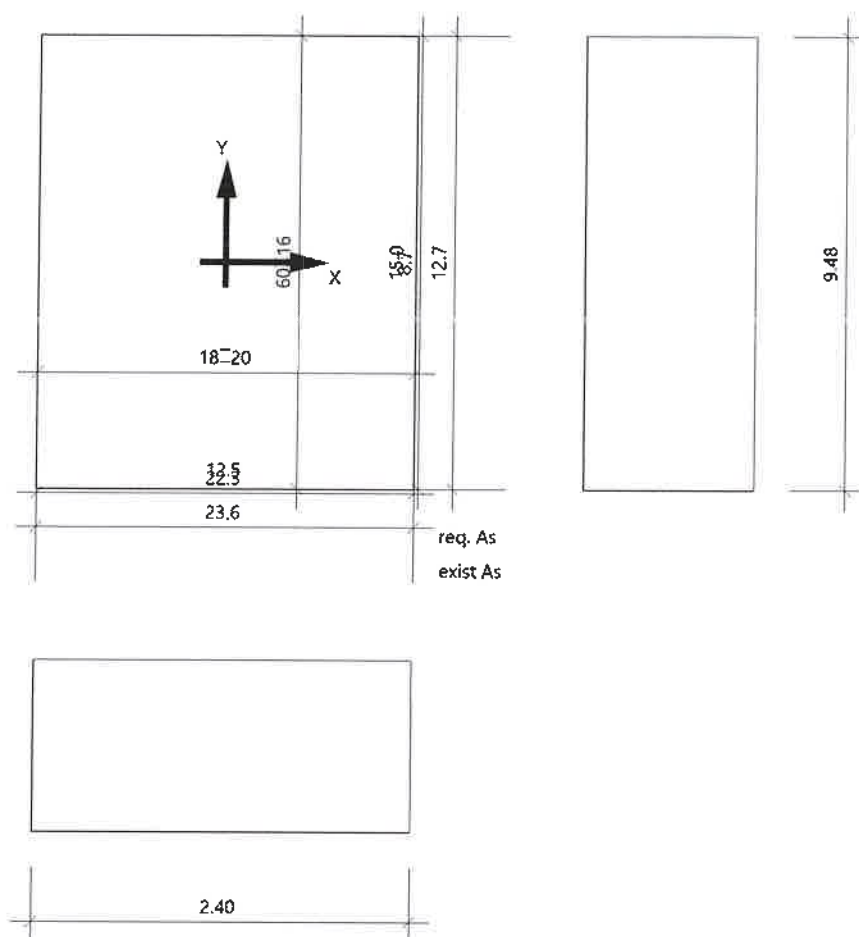
Reinforcement in y-direction top (m,cm2)

from	-120.0
to	120.0
Width	240.0
	18Ø20/12.5
req. As	53.6
exist.As	56.6
req.as/m	22.3
exist.as/m	23.6
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

Reinforcement Distribution bottom in m, cm2/m



In order to ensure the transverse carrying capacity, the foundation has been dimensioned in the punching range for minimum moments according to equation (NA.6.54.1), provided the shear force determination has not led to higher values.

Reinforcement Distribution top in m, cm²/m

Punching shear**Punching shear analysis Load case 2**

ULS for punching shear according to EN 1992-1-1:2004/A1:2014

Basis of calculation:

The flexural reinforcement strength is calculated as a mean value considering a slab width corresponding to the support dimension plus 3d per side. (6.4.4 (1))

Constant values β / Corner Column (auto-generated)

Effective depth	$d_m =$	0.64 m	
Load introduction	$c_x =$	0.90 m	Dimension in x-direction
Load introduction	$c_y =$	0.90 m	Dimension in y-direction
Radius critical perimeter	$r_k =$	1.22 m	
Circumference of critical perimeter	$U_{crit} =$	5.63 m	
Area of critical perimeter	$A_{crit} =$	8.90 m ²	
Bearing Pressure	$\sigma_{col} =$	104.49 kN/m ²	along column axis
Ratio of reinforcement, existing	$\rho_{exist} =$	0.29 %	
Ratio of reinforcement, Min. moments	$\rho_{min,x} =$	0.27 %	to 6.4.5
Ratio of reinforcement, Min. moments	$\rho_{min,y} =$	0.27 %	to 6.4.5
Ratio of reinforcement for execution without stirrup	$\rho_{v,Rdc} =$	0.01 %	< ρ_{max}
Ratio of reinforcement for compression strut	$\rho_{v,Rd,max} =$	0.00 %	< ρ_{max}
Ratio of reinforcement, maximum usage	$\rho_{max} =$	2.00 %	

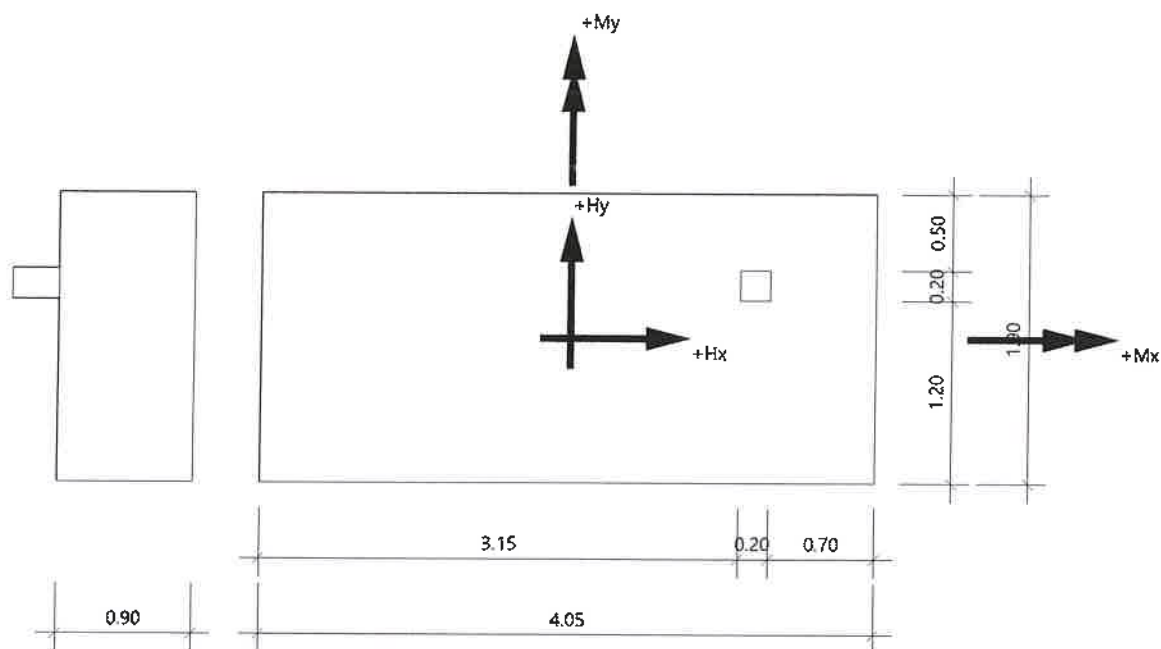
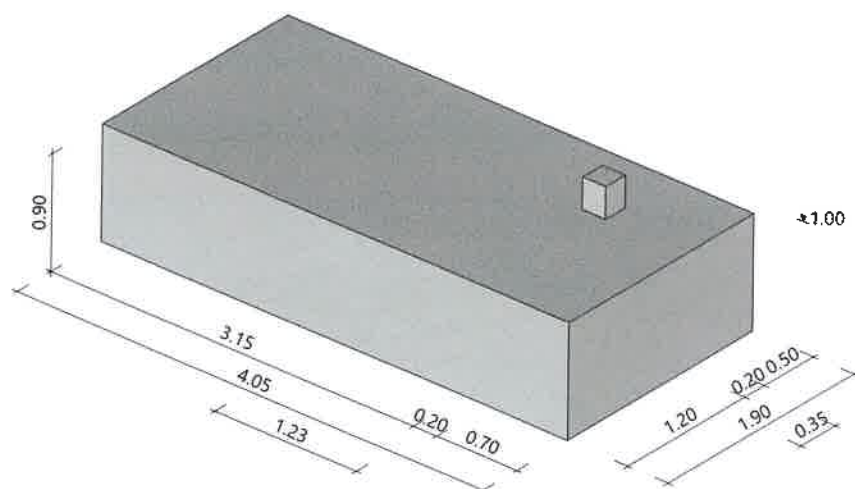
Determination of punching shear load:

Column load	$V_{Ed,col} =$	1060.0 kN	1060.0
Total vertical forces	$V_{Ed,red} =$	340.7 kN	
Layer in circular section	$x =$	0.00 m	relative to the column axis
Layer in circular section	$y =$	0.00 m	relative to the column axis

Factor Symmetry of rotation	$\beta =$	1.50	
Shear stress	$V_{Ed} =$	0.01 kN/cm ²	with β
Shear force, Edge of Column	$V_{Ed} =$	0.06 kN/cm ²	with β
Pre-factor	$C_{Rd,c} =$	0.120	
Scale factor	$k =$	1.559	
Shear slenderness	$\lambda =$	1.269	
Bearing capacity without punching reinforcement	$V_{Rd,c} =$	0.04 kN/cm ²	
Minimum bearing capacity	$V_{Rd,c,min} =$	0.02 kN/cm ²	
Bearing capacity of strut	$V_{Rd,max} =$	0.36 kN/cm ²	Edge of Column
Utilization for execution without stirrup	$\eta =$	0.37	
Utilization for compression strut	$\eta =$	0.18	
No stirrups required.			

Position: T -1 (Gb-1/Gj-A'')_R1 Tockovni temelj (v.29)

Isolated Foundation (x64) FD+ 02/2025B (FRILO R-2025-2/P04)

System**Plan view****Isometric**

Foundation acc. to EN 1992-1-1:2004/A1:2014 and EN 1997-1:2004/AC:2009

Member

Member	Concrete	Steel	Width (x) m	Width (y) m	Height (z) m
Foundation Column	C 25/30	B 500(B)	4.05	1.90	0.90
	C 25/30	B 500(B)	0.20	0.20	0.00

Eccentricity $e_x = 1.23$ m. Eccentricity $e_y = 0.35$ m. Embedment depth of the foundation in the subsoil 1.00 m. Without groundwater Design value of the bearing pressure resistance $\sigma_{R,d} = 430.77$ kN/m².

Characteristic values**Durability****Requirements durability:**

attack on concrete	X0
reinforc. corrosion	XC2
min. concrete class	C 25/30
Stirrup	$d_{s,b} = 16$ mm
long. reinforcement	$d_{s,l} = 16$ mm
allowance in design	$\Delta c_{dev} = 10$ mm
Stirrup	$c_{min,l} = 25$ mm
concrete coverage	$c_{nom,l} = 35$ mm
longitudinal bars	$c_{min,m} = 25$ mm
concrete coverage	$c_{nom,m} = 51$ mm *1
laying dist. link	$c_l = 35$ mm
all. crack width	$w_{max} = 0.30$ mm

*1:with $c_{min,l}$ **Loads****Column loads - Design values**

No.	Description	N kN	M _{xl} kNm	M _{xll} kNm	M _{yl} kNm	M _{yll} kNm	H _{xl} kN	H _{xll} kN	H _{yl} kN	H _{yll} kN	Red N ¹	Red M ¹	DS ²	LS
1	RC11-maxPz (CO13)	88.2	-25.80	-25.80	16.70	16.70	7.4	7.4	12.8	12.8	1.40	1.40	DST	STR
2	RC11-minPz8(CO116)	27.9	5.30	5.30	-6.20	-6.20	-1.2	-1.2	0.2	0.2	1.40	1.40	DST	STR
3	RC11-maxMx (CO58)	75.3	-33.40	-33.40	-0.70	-0.70	1.6	1.6	14.5	14.5	1.40	1.40	DST	STR
4	RC11-maxMy (CO27)	85.0	-17.60	-17.60	20.20	20.20	8.6	8.6	10.2	10.2	1.40	1.40	DST	STR
5	3 Stalna-G	41.1	-8.90	-8.90	5.60	5.60	2.8	2.8	5.2	5.2	1.00	1.00	DSP	SLS
6	RC12-SLS	64.0	-17.30	-17.30	13.80	13.80	5.9	5.9	8.9	8.9	1.00	1.00	DSP	SLS

1 : Reduction factors N for vertical loads and MH for moments and horizontal loads, used for generating missing limit states.

2 : DS: design situation P: Permanent A: accidental E: Earthquake T: transient

3 : only permanent loads

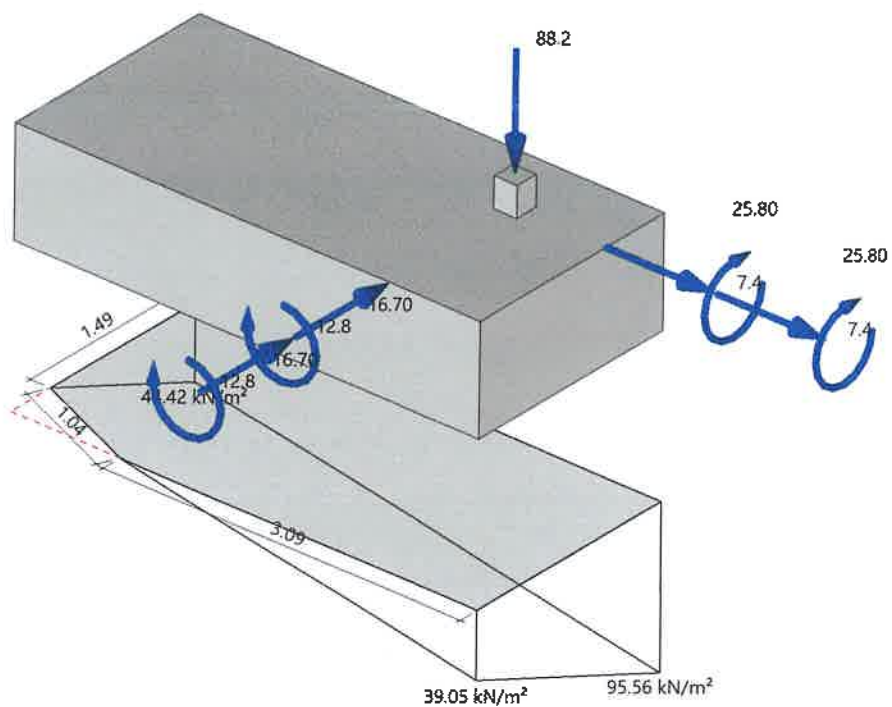
If a load case is not available in the required limit state for a verification, a load case with the same designation and required limit state is used. If there is no corresponding load case, a load case is generated using the reduction factors. Self-weight is taken into account in the calculation. Density Concrete : $\gamma = 25.00$ kN/m³. Total Foundation without socket resp. column 6.926 m³ / 173.14 kN. Horizontal loads act on the upper edge of the base or the column. Torsion from horizontal loads is not considered.

charakteristische Schnittgrößen in der Sohlfluge

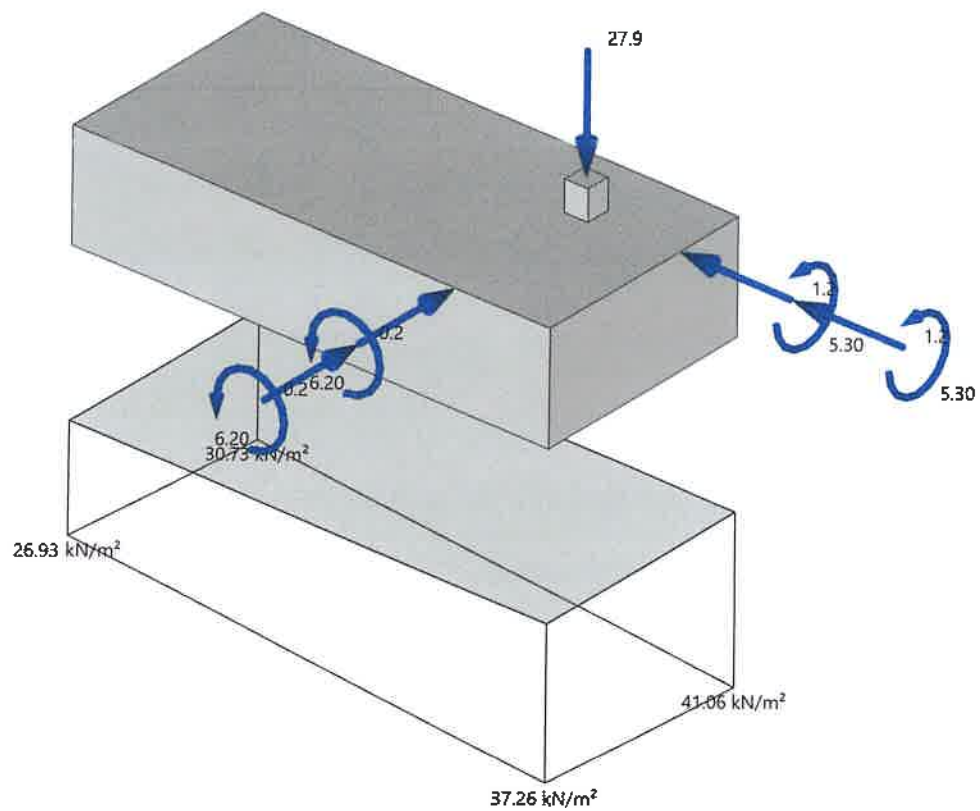
LC No.	Description	V kN	ex m	My kNm	ey m	Mx kNm	Hx kN	Hy kN
1	Th.1.O.	236.1	0.40	93.86	0.21	48.71	5.3	9.1
1	Th.2.O.	236.1	0.40	93.86	0.21	48.71	5.3	9.1
2	Th.1.O.	193.0	0.10	19.17	0.02	3.31	-0.9	0.1
2	Th.2.O.	193.0	0.10	19.17	0.02	3.31	-0.9	0.1
3	Th.1.O.	226.9	0.29	66.42	0.23	52.00	1.1	10.4
3	Th.2.O.	226.9	0.29	66.42	0.23	52.00	1.1	10.4
4	Th.1.O.	233.9	0.40	94.33	0.17	40.38	6.1	7.3
4	Th.2.O.	233.9	0.40	94.33	0.17	40.38	6.1	7.3
5	Th.1.O.	214.2	0.27	58.47	0.13	27.97	2.8	5.2
5	Th.2.O.	214.2	0.27	58.47	0.13	27.97	2.8	5.2
6	Th.1.O.	237.1	0.41	97.51	0.20	47.71	5.9	8.9
6	Th.2.O.	237.1	0.41	97.51	0.20	47.71	5.9	8.9

Load case graphics

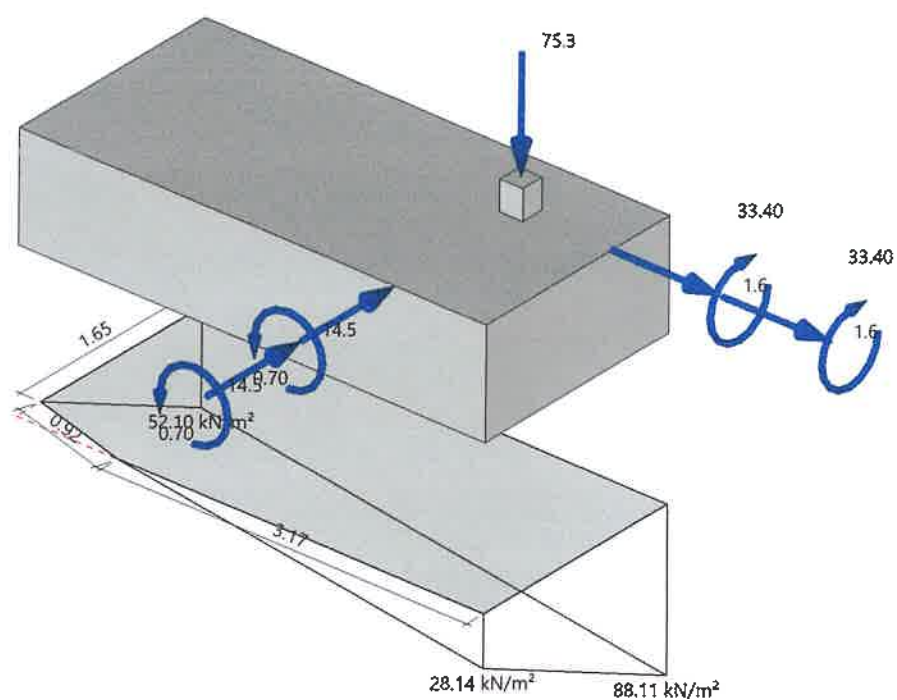
Load case 1 - RC11-maxPz (CO13) -



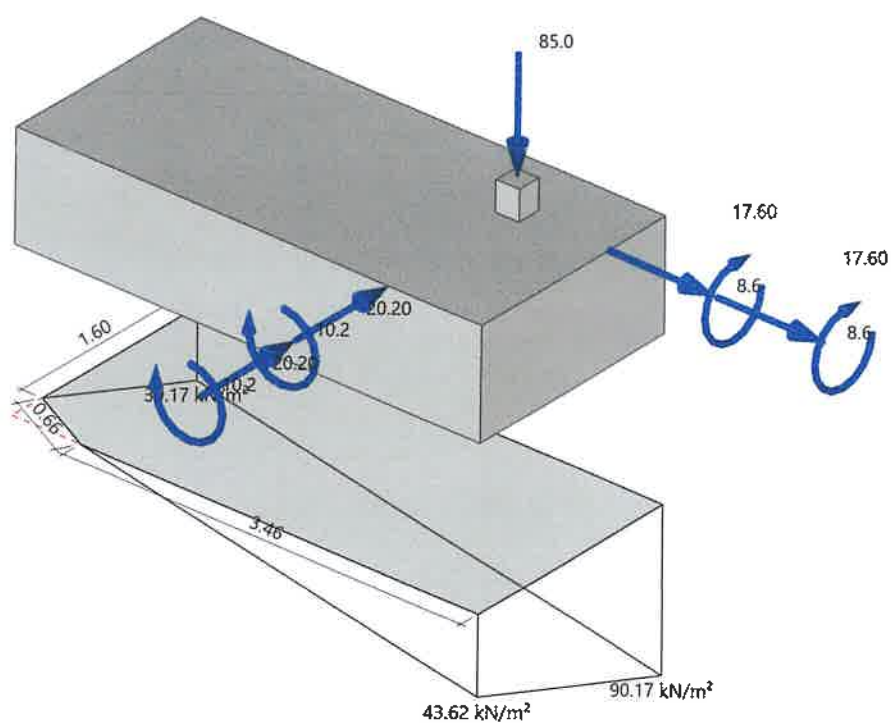
Load case 2 - RC11-minPz8(CO116) -



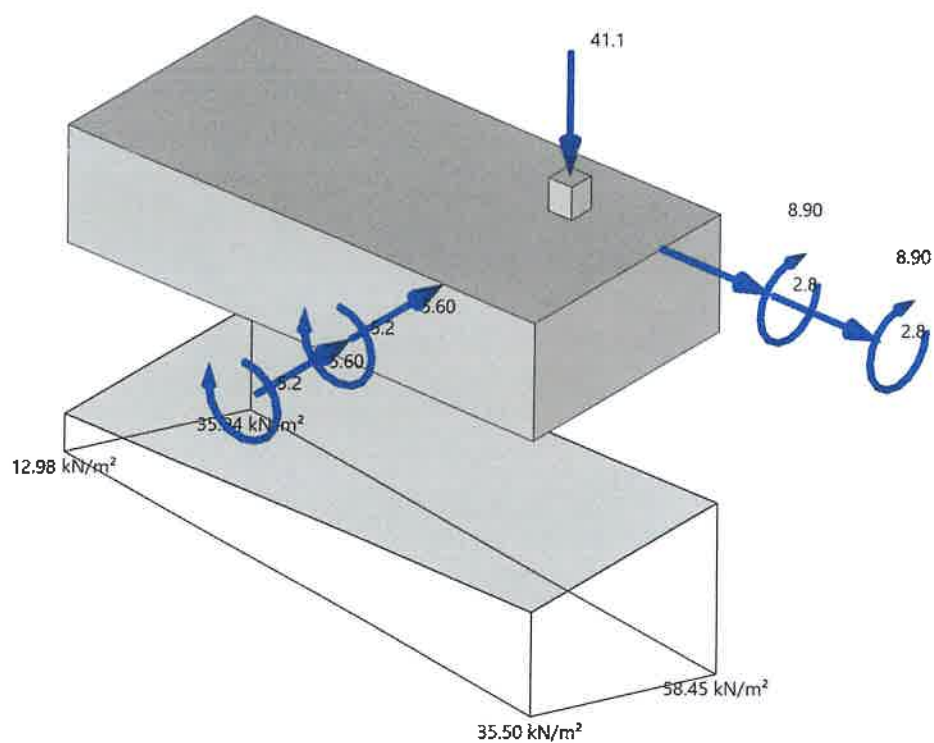
Load case 3 - RC11-maxMx (CO58) -



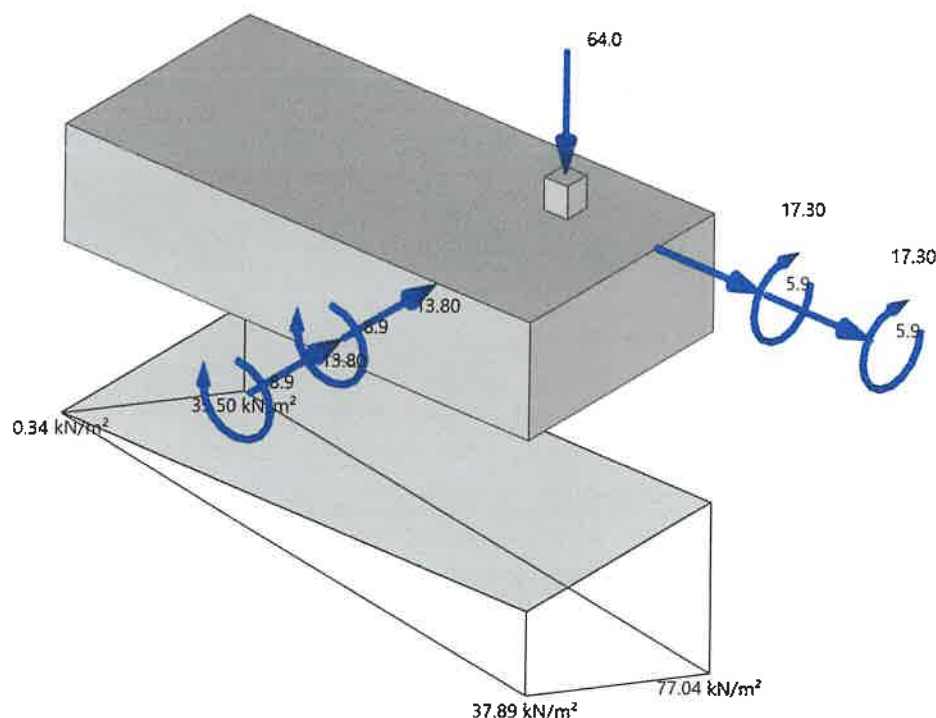
Load case 4 - RC11-maxMy (CO27) -



Load case 5 - Stalna-G -



Load case 6 - RC12-SLS -



Results

Preview Checks

Check	Load case	$\eta $	Load case	$\eta $
Gaping joint only permanent loads ULS	5 ¹	0.89	5 ¹	0.10
Gaping joint permanent and variable loads ULS	1 ¹	0.35	1 ¹	0.35
Gaping joint only permanent loads SLS characteristic	5 ¹	0.82	5 ¹	0.08
Gaping joint permanent and variable loads SLS characteristic	6 ¹	0.19	6 ¹	0.19
Stability	3 ¹	0.24	3 ¹	0.24
Simplified method ULS	1 ¹	0.16	1 ¹	0.18
Inclination of base pressure resultant	3 ¹	0.23	3 ¹	0.23
Punching shear $V_{Ed}/V_{Rd,c}$			1	0.03
Punching shear $V_{Ed}/V_{Rd,max}$			1	0.05

1 : Or corresponding load case with the same designation.

Preview Reinforcement

Type	Load case	cm ²
Bending $A_{s,x,u}$	1 ¹	21.3
Bending $A_{s,y,u}$	3 ¹	45.4
Bending $A_{s,x,o}$	4 ¹	21.6
Bending $A_{s,y,o}$	3 ¹	46.0

1 : Or corresponding load case with the same designation.

The inclination of the characteristic or representative base pressure resultant First order effects

$$\tan \delta = H/V = 0.05 \leq 0.20$$

The inclination of the characteristic or representative base pressure resultant makes the simplified check possible.

Design value of the bearing pressure resistance $\sigma_{R,d} = 400.00 \text{ kN/m}^2$

$\sigma_{R,d} = 430.77 \text{ kN/m}^2$. The design value of bearing pressure resistance has been specified directly. Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$.

Simplified method Resulting Load Case

No.	LS	DS	N _d kN	R ₀ kN	a' m	b' m	σ_d kN/m ²	$\sigma_{R,d}$ kN/m ²	η
1 _I	GEO	T	321.9	0.0	3.23	1.48	67.43	430.77 ¹	0.16
1 _{II}	GEO	T	321.9	0.0	3.04	1.38	76.73	430.77 ¹	0.18

1 : Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$

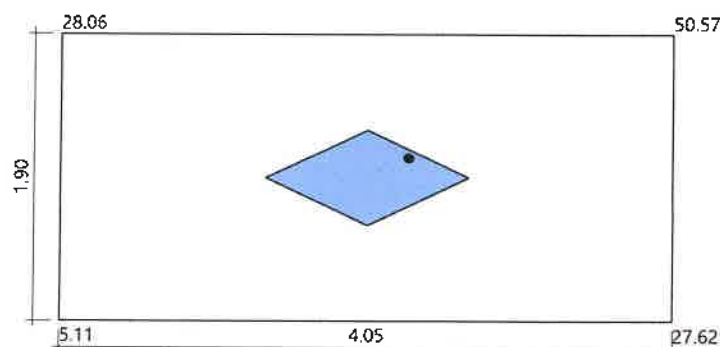
The bearing pressure is influenced by partial safety factors.

Gaping joint**Gaping joint to EN 1997-1:2004/AC:2009 Resulting Load Case First order effects and second order effects**

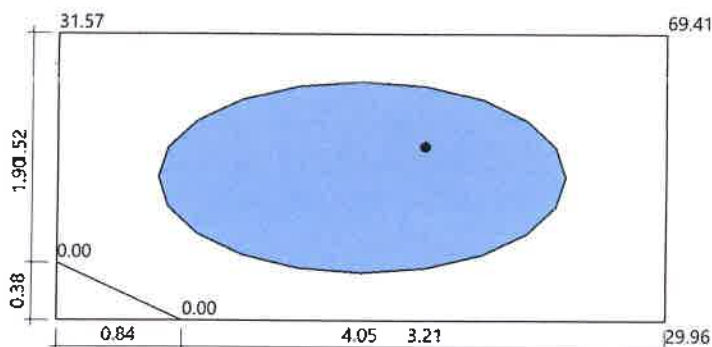
No.	LS	DS	N kN	e _x m	e _y m	a*/(1/6)	b*/(1/9)	η_G	$\eta_{G,Q}$
5 _I	EQU	P	196.9	0.30	0.14	0.148/0.167	0.011/0.111	0.89	0.35
5 _{II}	EQU	P	196.9	0.30	0.14			0.10	
1 _I	EQU	T	244.0	0.54	0.28			0.039/0.111	
1 _{II}	EQU	T	244.0	0.54	0.28	0.136/0.167	0.039/0.111	0.82	0.35
5 _I	SLS	P	214.2	0.27	0.13				
5 _{II}	SLS	P	214.2	0.27	0.13				
6 _I	SLS	P	237.1	0.41	0.20	0.022/0.111	0.022/0.111	0.19	0.19
6 _{II}	SLS	P	237.1	0.41	0.20				

$$a^* = e_x/b_x + e_y/b_y \quad b^* = (e_x/b_x)^2 + (e_y/b_y)^2 \quad \eta_G = a^*/(1/6) \quad \eta_{G,Q} = b^*/(1/9)$$

If no relevant characteristic load cases have been defined, the verification of the gaping joint has been reduced to a characteristic level using reduction factors.

Graphic only permanent loads

Graphic permanent and variable loads



Bending

Design Result Load Cases

LC	$M_{yu,Ed}$ kNm	$M_{xu,Ed}$ kNm	$M_{yo,Ed}$ kNm	$M_{xo,Ed}$ kNm	$A_{s,xu}$ cm ²	$A_{s,yu}$ cm ²	$A_{s,xo}$ cm ²	$A_{s,yo}$ cm ²
1 1	18.52	22.66	-2.32	-12.31	21.3*	45.4*	21.6*	46.0*
3	13.76	22.73	0.00	-21.65	21.3*	45.4*	0.0	46.0*
4	18.03	19.29	-7.19	-5.22	21.3*	45.4*	21.6*	46.0*

*: Minimal reinforcement by EN 1992-1-1:2004/A1:2014 9.2.1.1 (1)

1 : Or corresponding load case with the same designation.

Reinforcement layer Reinforcement in x-direction $d1,x = 5.9$ cm. Reinforcement layer Reinforcement in y-direction $d1,y = 5.9$ cm. Reinforcement layer Reinforcement in x-direction $d2,x = 4.8$ cm. Reinforcement layer Reinforcement in y-direction $d2,y = 4.8$ cm. Rounded bending moment from the axis of the column. 20% transverse reinforcement was taken into account.

Minimum reinforcement to ensure shear capacity acc.to EN 1992:2014 NCI 6.4.5

Min. moments	$M_{y,min} = \eta_x * v_{Ed} * b_{eff,y}$	=	$0.500 * 86.7 * 0.87$	=	37.84 kNm
Min. reinforcement	$A_{s,x,min} =$	=		=	1.0 cm ²
Min. moments	$M_{x,min} = \eta_y * v_{Ed} * b_{eff,x}$	=	$0.500 * 86.7 * 0.87$	=	37.84 kNm
Min. reinforcement	$A_{s,y,min} =$	=		=	1.0 cm ²

Reinforcement in x-direction bottom (m,cm²)

from	-95.0	-47.5	47.5
to	-47.5	47.5	95.0
Width	47.5	95.0	47.5
	3Ø16/15.0	6Ø16/15.0	3Ø16/15.0
req. As	5.3	10.6	5.3
exist. As	6.0	12.1	6.0
req. as/m	11.2	11.2	11.2
exist. as/m	12.7	12.7	12.7
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in y-direction bottom (m,cm2)

from	-202.5	-101.3	101.3
to	-101.3	101.3	202.5
Width	101.3	202.5	101.3
	6Ø16/17.5	12Ø16/17.5	6Ø16/17.5
req. As	11.4	22.7	11.4
exist.As	12.1	23.7	12.1
req.as/m	11.2	11.2	11.2
exist.as/m	11.9	11.7	11.9
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

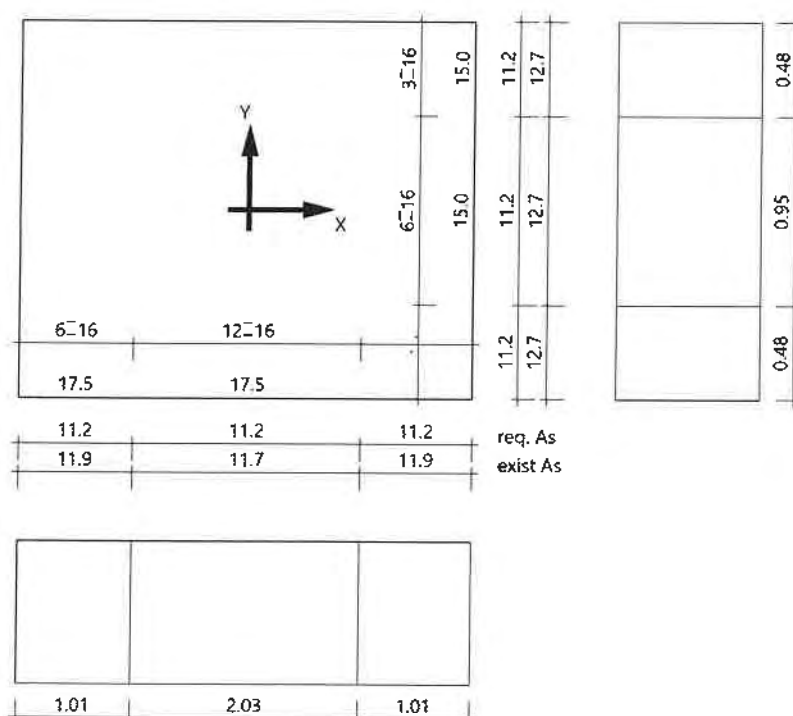
Reinforcement in x-direction top (m,cm2)

from	-95.0
to	95.0
Width	190.0
	12Ø16/15.0
req. As	21.6
exist.As	24.2
req.as/m	11.4
exist.as/m	12.7
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

Reinforcement in y-direction top (m,cm2)

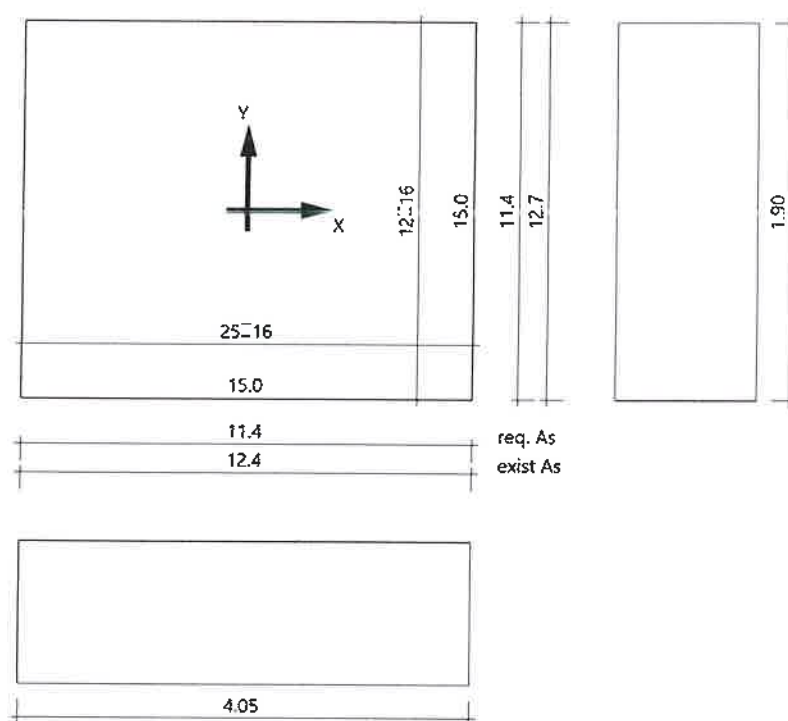
from	-202.5
to	202.5
Width	405.0
	25Ø16/15.0
req. As	46.0
exist.As	50.2
req.as/m	11.4
exist.as/m	12.4
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

Reinforcement Distribution bottom in m, cm2/m



In order to ensure the transverse carrying capacity, the foundation has been dimensioned in the punching range for minimum moments according to equation (NA.6.54.1), provided the shear force determination has not led to higher values.

Reinforcement Distribution top in m, cm²/m



Punching shear
Punching shear analysis Load case 1

ULS for punching shear according to EN 1992-1-1:2004/A1:2014

Basis of calculation:

The flexural reinforcement strength is calculated as a mean value considering a slab width corresponding to the support dimension plus 3d per side. (6.4.4 (1))

 Constant values β / Corner Column (auto-generated)

Effective depth	$d_m = 0.84 \text{ m}$	
Load introduction	$c_x = 0.20 \text{ m}$	Dimension in x-direction
Load introduction	$c_y = 0.20 \text{ m}$	Dimension in y-direction
Radius critical perimeter	$r_k = 0.34 \text{ m}$	
Circumference of critical perimeter	$U_{crit} = 2.13 \text{ m}$	
Area of critical perimeter	$A_{crit} = 1.26 \text{ m}^2$	
Bearing Pressure	$\sigma_{col} = 67.61 \text{ kN/m}^2$	along column axis
Ratio of reinforcement, existing	$\rho_{exist} = 0.15 \%$	
Ratio of reinforcement, Min. moments	$\rho_{min,x} = 0.01 \%$	to 6.4.5
Ratio of reinforcement, Min. moments	$\rho_{min,y} = 0.01 \%$	to 6.4.5
Ratio of reinforcement for execution without stirrup	$\rho_{v,Rdc} = 0.00 \%$	< ρ_{max} .
Ratio of reinforcement for compression strut	$\rho_{v,Rd,max} = 0.00 \%$	< ρ_{max} .
Ratio of reinforcement, maximum usage	$\rho_{max} = 2.00 \%$	

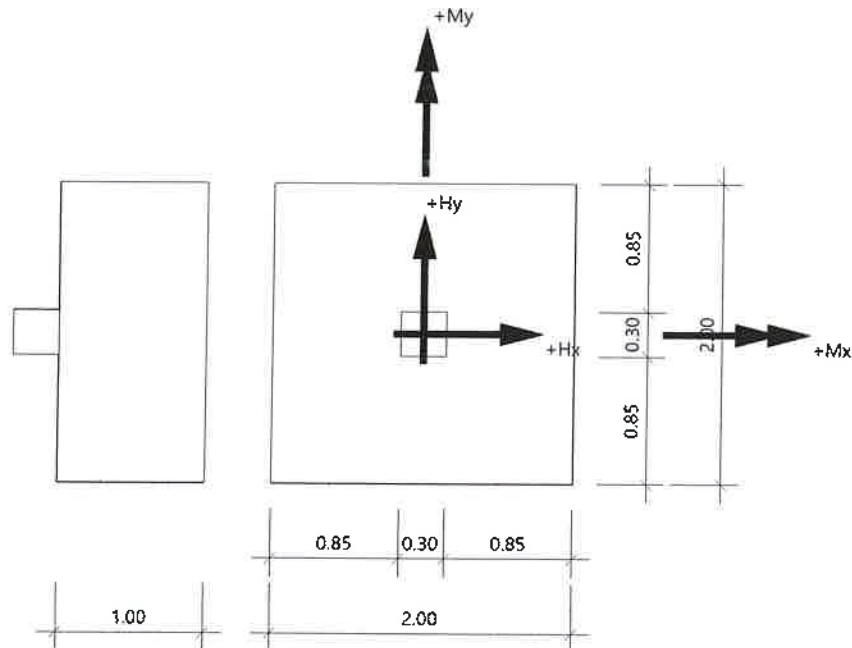
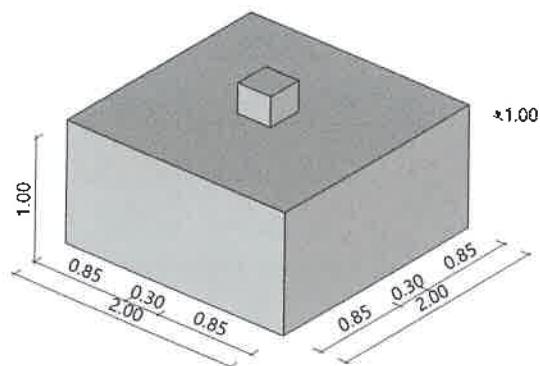
Determination of punching shear load:

Column load	$V_{Ed,col} = 88.2 \text{ kN}$	88.2
Total vertical forces	$V_{Ed,red} = 41.4 \text{ kN}$	
Layer in circular section	$x = 0.00 \text{ m}$	relative to the column axis
Layer in circular section	$y = 0.00 \text{ m}$	relative to the column axis

Factor Symmetry of rotation	$\beta = 1.50$	
Shear stress	$v_{Ed} = 0.003 \text{ kN/cm}^2$	with β
Shear force, Edge of Column	$V_{Ed} = 0.02 \text{ kN/cm}^2$	with β
Pre-factor	$C_{Rd,c} = 0.120$	
Scale factor	$k = 1.488$	
Shear slenderness	$\lambda = 0.703$	
Bearing capacity without punching reinforcement	$v_{Rd,c} = 0.14 \text{ kN/cm}^2$	
Minimum bearing capacity	$v_{Rd,c,min} = 0.11 \text{ kN/cm}^2$	
Bearing capacity of strut	$v_{Rd,max} = 0.36 \text{ kN/cm}^2$	Edge of Column
Utilization for execution without stirrup	$\eta = 0.03$	
Utilization for compression strut	$\eta = 0.05$	
No stirrups required.		

Position: T-2 (Gj-0/Gj-A) Tockovni temelj (v.28)

Isolated Foundation (x64) FD+ 02/2025B (FRILO R-2025-2/P03)

System**Plan view****Isometric**

Foundation acc. to EN 1992-1-1:2004/A1:2014 and EN 1997-1:2004/AC:2009

Member

Member	Concrete	Steel	Width (x) m	Width (y) m	Height (z) m
Foundation	C 25/30	B 500(B)	2.00	2.00	1.00
Column	C 25/30	B 500(B)	0.30	0.30	0.00

Embedment depth of the foundation in the subsoil 1.00 m. Without groundwater Design value of the bearing pressure resistance $\sigma_{R,d} = 430.77 \text{ kN/m}^2$.

Characteristic values**Durability****Requirements durability:**

attack on concrete	X0
reinforc. corrosion	XC2
min. concrete class	C 25/30
Stirrup	$d_{s,b} = 16$ mm
long. reinforcement	$d_{s,l} = 16$ mm
allowance in design	$\Delta c_{dev} = 10$ mm
Stirrup	$c_{min,l} = 25$ mm
concrete coverage	$c_{nom,l} = 35$ mm
longitudinal bars	$c_{min,m} = 25$ mm
concrete coverage	$c_{nom,m} = 51$ mm *1
laying dist. link	$c_l = 35$ mm
all. crack width	$w_{max} = 0.30$ mm

*1: with $c_{min,l}$ **Loads****Column loads - Design values**

No.	Description	N kN	M_{xI} kNm	M_{xII} kNm	M_{yI} kNm	M_{yII} kNm	H_{xI} kN	H_{xII} kN	H_{yI} kN	H_{yII} kN	Red N^1	Red MH^1	DS ²	LS
1	RC11-maxPz	88.0	48.55	48.55	1.96	1.96	0.9	0.9	-18.4	-18.4	1.40	1.40	DST	STR
2	RC11-minPz	30.7	-30.60	-30.60	-2.63	-2.63	-0.8	-0.8	7.4	7.4	1.40	1.40	DST	STR
3	RC11-maxMx	81.8	61.38	61.38	0.66	0.66	0.4	0.4	-21.8	-21.8	1.40	1.40	DST	STR
4	RC11-maxMy	83.5	25.00	25.00	3.70	3.70	1.4	1.4	-11.6	-11.6	1.40	1.40	DST	STR
5 ³	Stalna-G	42.3	9.60	9.60	0.80	0.80	0.4	0.4	-4.8	-4.8	1.00	1.00	DSP	SLS
6	RC12-SLS	63.8	34.60	34.60	2.00	2.00	0.8	0.8	-13.3	-13.3	1.00	1.00	DSP	SLS

1 : Reduction factors N for vertical loads and MH for moments and horizontal loads, used for generating missing limit states.
2 : DS: design situation P: Permanent A: accidental E: Earthquake T: transient
3 : only permanent loads

If a load case is not available in the required limit state for a verification, a load case with the same designation and required limit state is used. If there is no corresponding load case, a load case is generated using the reduction factors. Self-weight is taken into account in the calculation. Density Concrete : $\gamma = 25.00$ kN/m³. Total Foundation without socket resp. column 4.000 m³ / 100.00 kN. Horizontal loads act on the upper edge of the base or the column. Torsion from horizontal loads is not considered.

charakteristische Schnittgrößen in der Sohlfluge

LC No.	Description	V kN	e_x m	M_y kNm	e_y m	M_x kNm	H_x kN	H_y kN
1	Th.1.O.	184.3	0.01	2.04	-0.26	-47.84	0.6	-13.2
1	Th.2.O.	184.3	0.01	2.04	-0.26	-47.84	0.6	-13.2
2	Th.1.O.	143.4	-0.02	-2.45	0.19	27.14	-0.6	5.3
2	Th.2.O.	143.4	-0.02	-2.45	0.19	27.14	-0.6	5.3
3	Th.1.O.	179.9	0.004	0.78	-0.33	-59.43	0.3	-15.6
3	Th.2.O.	179.9	0.004	0.78	-0.33	-59.43	0.3	-15.6
4	Th.1.O.	181.1	0.02	3.66	-0.14	-26.14	1.0	-8.3
4	Th.2.O.	181.1	0.02	3.66	-0.14	-26.14	1.0	-8.3
5	Th.1.O.	142.3	0.01	1.20	-0.10	-14.40	0.4	-4.8
5	Th.2.O.	142.3	0.01	1.20	-0.10	-14.40	0.4	-4.8
6	Th.1.O.	163.8	0.02	2.80	-0.29	-47.90	0.8	-13.3
6	Th.2.O.	163.8	0.02	2.80	-0.29	-47.90	0.8	-13.3

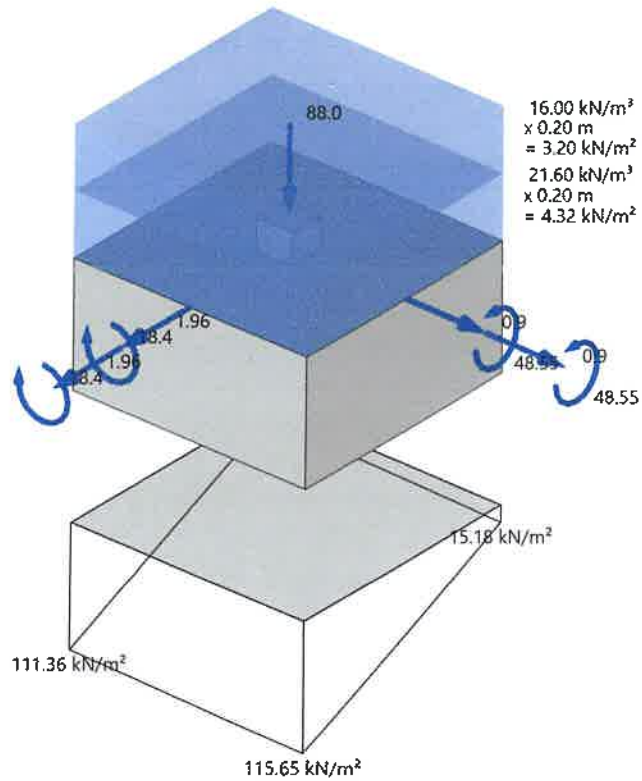
Area Loads

No.	Considered in load case	Action	h_E m	γ_E kN/m ³	q kN/m ²	R kN
1	1, 2, 3, 4	design value	0.20	21.60	0.00	17.3 ¹
2	1, 2, 3, 4	design value	0.20	16.00	0.00	12.8 ¹

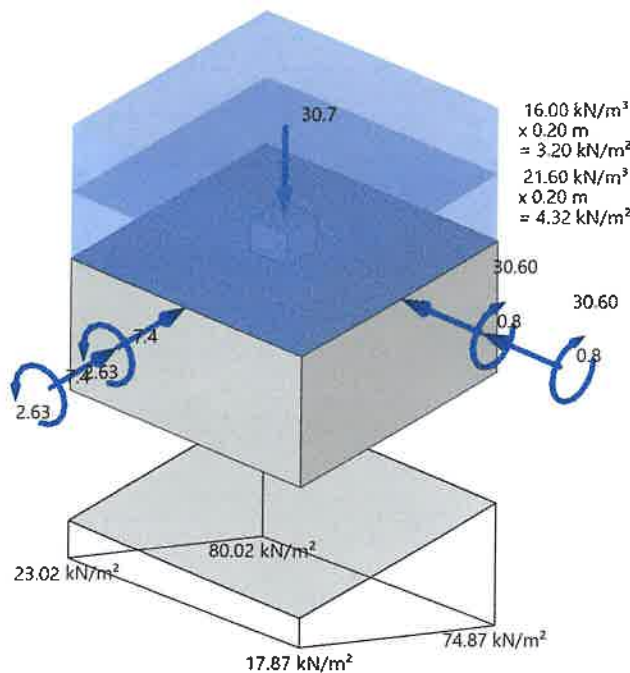
1 : Gross value. During the design, this load is reduced by the sleeve or column.

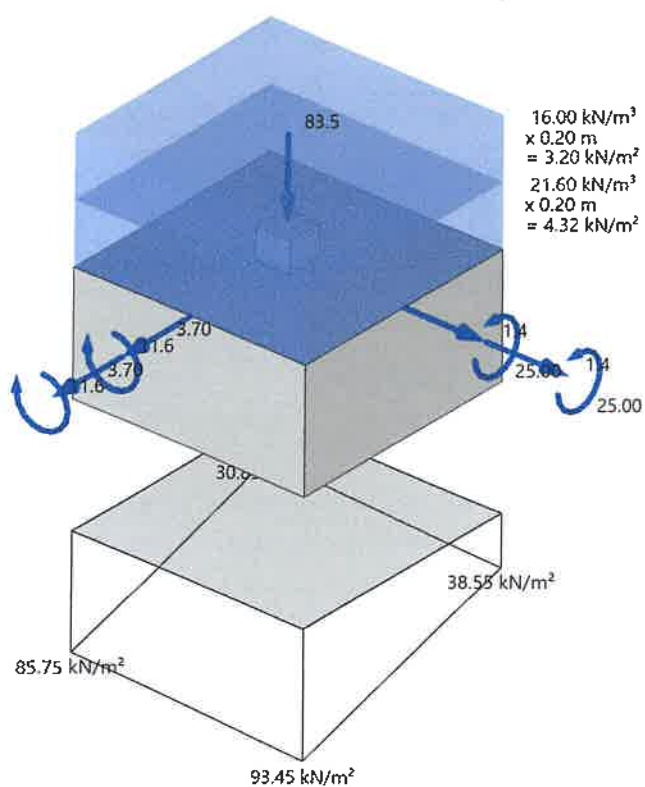
Load case graphics

Load case 1 - RC11-maxPz -

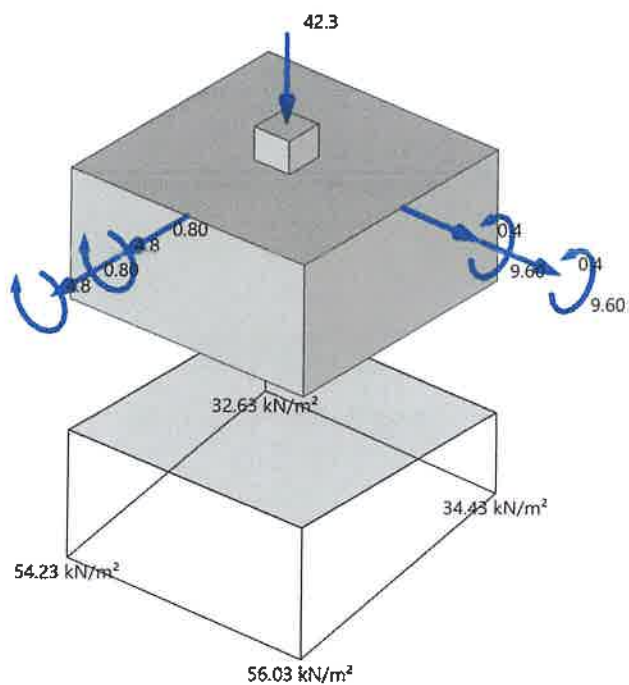


Load case 2 - RC11-minPz -

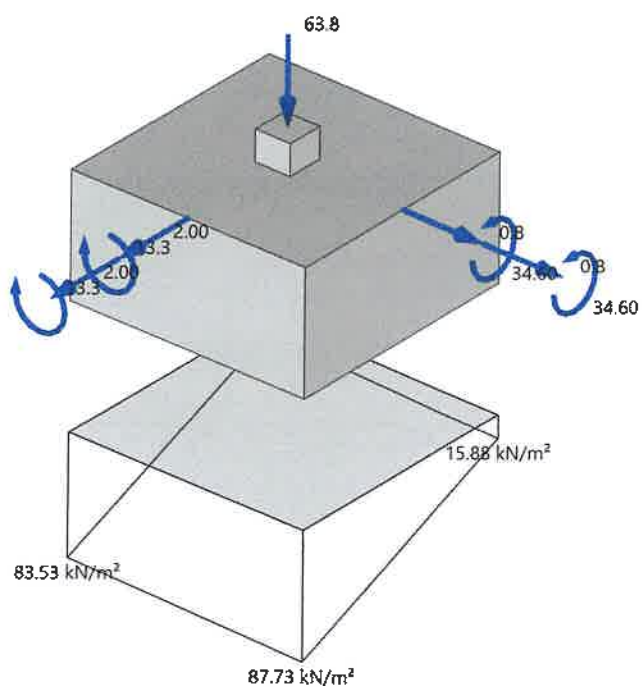




Load case 5 - Stalna-G -



Load case 6 - RC12-SLS -



Results

Preview Checks

Check	Load case	η	Load case	η
Gaping joint only permanent loads ULS	5 ¹	0.35	5 ¹	0.03
Gaping joint permanent and variable loads ULS	3 ¹	0.38	3 ¹	0.38
Gaping joint only permanent loads SLS characteristic	5 ¹	0.33	5 ¹	0.02
Gaping joint permanent and variable loads SLS characteristic	3 ¹	0.25	3 ¹	0.25
Stability	3 ¹	0.38	3 ¹	0.38
Simplified method ULS	3 ¹	0.22	3 ¹	0.24
Inclination of base pressure resultant	3 ¹	0.43	3 ¹	0.43
Punching shear $V_{Ed}/V_{Rd,c}$			1	0.02
Punching shear $V_{Ed}/V_{Rd,max}$			1	0.02

1 : Or corresponding load case with the same designation.

Preview Reinforcement

Type	Load case	cm2
Bending $A_{s,x,u}$	4 ¹	25.1
Bending $A_{s,y,u}$	3 ¹	25.1
Bending $A_{s,y,o}$	3 ¹	25.4

1 : Or corresponding load case with the same designation.

The inclination of the characteristic or representative base pressure resultant First order effects

$\tan \delta = H/V = 0.09 \leq 0.20$

The inclination of the characteristic or representative base pressure resultant makes the simplified check possible.

Design value of the bearing pressure resistance $\sigma_{R,d} = 400.00 \text{ kN/m}^2$

$\sigma_{R,d} = 430.77 \text{ kN/m}^2$. The design value of bearing pressure resistance has been specified directly. Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1.4/1.3 = \{107.7\% \}$.

Simplified method Resulting Load Case

No.	LS	DS	N_d kN	R_o kN	a' m	b' m	σ_d kN/m2	σ_{Rd} kN/m2	η
3 _I	GEO	T	246.9	0.0	1.99	1.33	93.51	430.77	1
3 _{II}	GEO	T	246.9	0.0	1.99	1.21	102.15	430.77	1

1 : Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1.4/1.3 = \{107.7\% \}$

The bearing pressure is influenced by partial safety factors.

Gaping joint

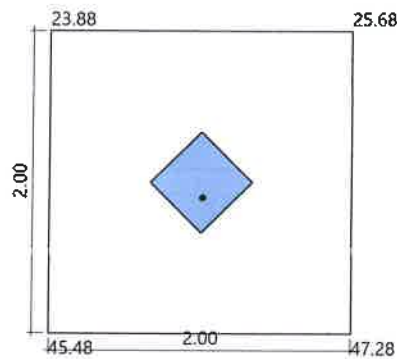
Gaping joint to EN 1997-1:2004/AC:2009 Resulting Load Case First order effects and second order effects

No.	LS	DS	N kN	e_x m	e_y m	$a^*/(1/6)$	$b^*/(1/9)$	η_G	$\eta_{G,Q}$
5 _I	EQU	P	132.3	0.01	-0.11	0.059/0.167	0.003/0.111	0.35	0.38
5 _{II}	EQU	P	132.3	0.01	-0.11				
3 _I	EQU	T	201.9	0.01	-0.41				
3 _{II}	EQU	T	201.9	0.01	-0.41				
5 _I	SLS	P	142.3	0.01	-0.10	0.055/0.167	0.003/0.111	0.33	0.38
5 _{II}	SLS	P	142.3	0.01	-0.10				
3 _I	SLS	T	179.9	0.004	-0.33				
3 _{II}	SLS	T	179.9	0.004	-0.33				

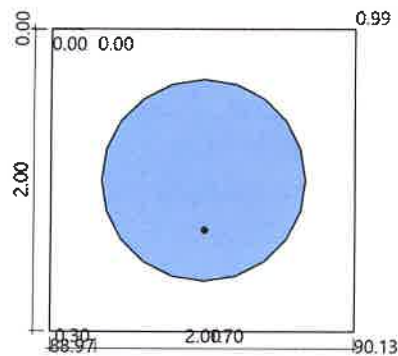
$a^* = e_x/b_x + e_y/b_y$ $b^* = (e_x/b_x)^2 + (e_y/b_y)^2$ $\eta_G = a^*/(1/6)$ $\eta_{G,Q} = b^*/(1/9)$

If no relevant characteristic load cases have been defined, the verification of the gaping joint has been reduced to a characteristic level using reduction factors.

Graphic only permanent loads



Graphic permanent and variable loads



Bending

Design Result Load Cases

LC	$M_{y,u,Ed}$ kNm	$M_{x,u,Ed}$ kNm	$M_{y,o,Ed}$ kNm	$M_{x,o,Ed}$ kNm	$A_{s,xu}$ cm ²	$A_{s,yu}$ cm ²	$A_{s,xo}$ cm ²	$A_{s,yo}$ cm ²
4 ¹	20.31	36.00	0.00	0.00	25.1*	25.1*	0.0	0.0
3	17.91	59.32	0.00	-20.65	25.1*	25.1*	0.0	25.4*

*: Minimal reinforcement by EN 1992-1-1:2004/A1:2014 9.2.1.1 (1)

1 : Or corresponding load case with the same designation.

Reinforcement layer Reinforcement in x-direction $d1,x = 5.9$ cm. Reinforcement layer Reinforcement in y-direction $d1,y = 5.9$ cm. Reinforcement layer Reinforcement in x-direction $d2,x = 4.8$ cm. Reinforcement layer Reinforcement in y-direction $d2,y = 4.8$ cm. Rounded bending moment from the axis of the column. 20% transverse reinforcement was taken into account.

Minimum reinforcement to ensure shear capacity acc.to EN 1992:2014 NCI 6.4.5

Min. moments	$M_{y,min} = \eta_x \cdot V_{Ed} \cdot b_{eff,y}$	$= 0.125 \cdot 86.0 \cdot 0.98$	$= 10.54$ kNm
Min. reinforcement	$A_{s,x,min} =$	$=$	$= 0.2$ cm ²
Min. moments	$M_{x,min} = \eta_y \cdot V_{Ed} \cdot b_{eff,x}$	$= 0.125 \cdot 86.0 \cdot 0.98$	$= 10.54$ kNm
Min. reinforcement	$A_{s,y,min} =$	$=$	$= 0.2$ cm ²

Reinforcement in x-direction bottom (m,cm2)

from	-100.0	-50.0	50.0
to	-50.0	50.0	100.0
Width	50.0	100.0	50.0
	4Ø16/12.5	7Ø16/15.0	4Ø16/12.5
req. As	6.3	12.6	6.3
exist.As	8.4	13.4	8.4
req.as/m	12.6	12.6	12.6
exist.as/m	16.8	13.4	16.8
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Lower reinforcement: The peak values of the distribution according to Issue 631 of the German Committee for Reinforced Concrete will be covered. Therefore, the here required reinforcement may be higher than the required reinforcement.

Reinforcement in y-direction bottom (m,cm2)

from	-100.0	-50.0	50.0
to	-50.0	50.0	100.0
Width	50.0	100.0	50.0
	4Ø16/12.5	7Ø16/15.0	4Ø16/12.5
req. As	6.3	12.6	6.3
exist.As	8.4	13.4	8.4
req.as/m	12.6	12.6	12.6
exist.as/m	16.8	13.4	16.8
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

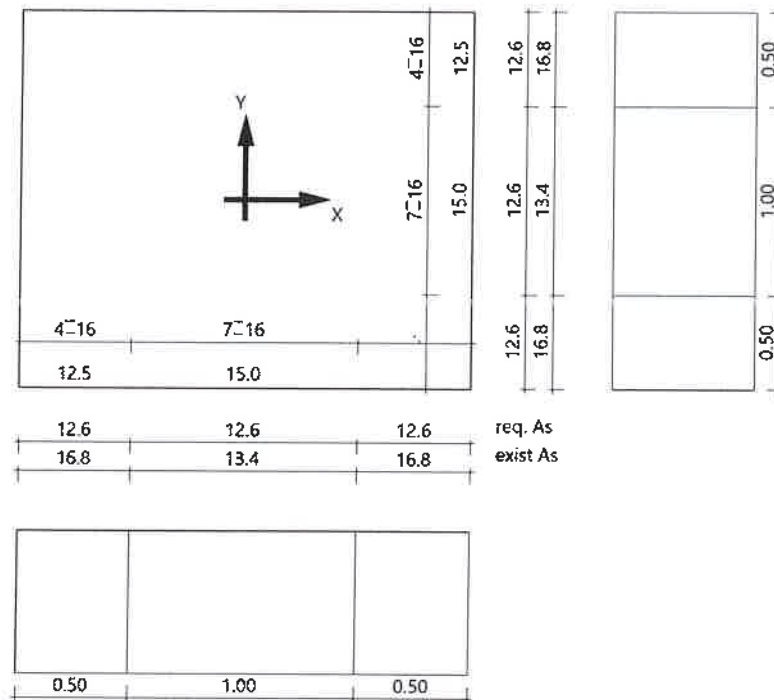
Lower reinforcement: The peak values of the distribution according to Issue 631 of the German Committee for Reinforced Concrete will be covered. Therefore, the here required reinforcement may be higher than the required reinforcement.

Reinforcement in x-direction top (m,cm2)

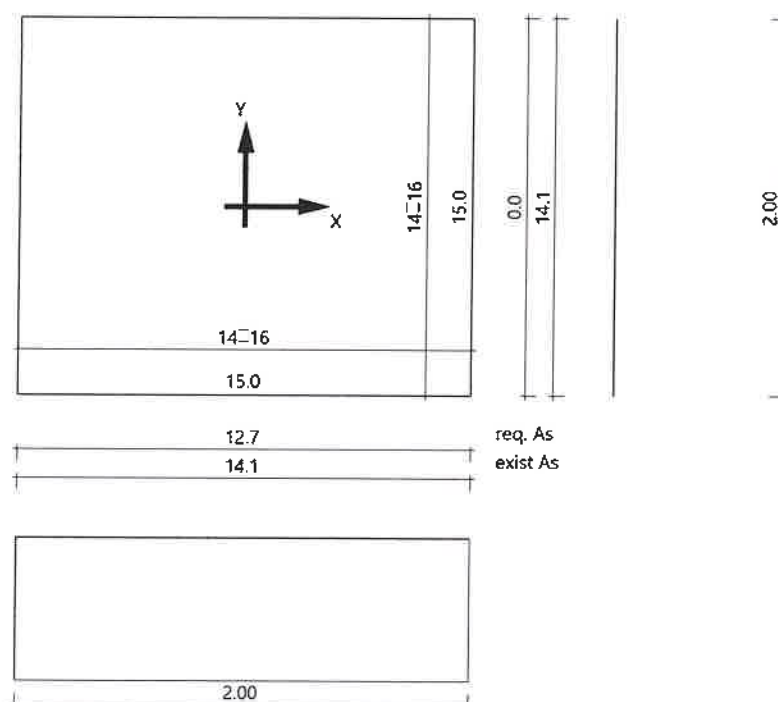
from	-100.0
to	100.0
Width	200.0
complete width	15Ø14/10.0 14Ø16/15.0
req. As	0.0
exist.As	28.2
req.as/m	0.0
exist.as/m	14.1
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

Reinforcement in y-direction top (m,cm2)

from	-100.0
to	100.0
Width	200.0
complete width	15Ø14/10.0 14Ø16/15.0
req. As	25.4
exist.As	28.2
req.as/m	12.7
exist.as/m	14.1
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

Reinforcement Distribution bottom in m, cm²/m

Lower reinforcement: The peak values of the distribution according to issue 631 of the German Committee for Reinforced Concrete will be covered. Therefore, the here required reinforcement may be higher than the required reinforcement. In order to ensure the transverse carrying capacity, the foundation has been dimensioned in the punching range for minimum moments according to equation (NA.6.54.1), provided the shear force determination has not led to higher values.

Reinforcement Distribution top in m, cm²/m

Punching shear**Punching shear analysis Load case 1**

ULS for punching shear according to EN 1992-1-1:2004/A1:2014

Basis of calculation:

The flexural reinforcement strength is calculated as a mean value considering a slab width corresponding to the support dimension plus 3d per side. (6.4.4 (1))

Constant values β / Inner column (auto-generated)

Effective depth	$d_m = 0.94$ m	
Load introduction	$c_x = 0.30$ m	Dimension in x-direction
Load introduction	$c_y = 0.30$ m	Dimension in y-direction
Radius critical perimeter	$r_k = 0.34$ m	
Circumference of critical perimeter	$U_{crit} = 3.34$ m	
Area of critical perimeter	$A_{crit} = 0.86$ m ²	
Bearing Pressure	$\sigma_{col} = 63.27$ kN/m ²	along column axis
Ratio of reinforcement, existing	$\rho_{exist} = 0.16$ %	
Ratio of reinforcement, Min. moments	$\rho_{min,x} = 0.00$ %	to 6.4.5
Ratio of reinforcement, Min. moments	$\rho_{min,y} = 0.00$ %	to 6.4.5
Ratio of reinforcement for execution without stirrup	$\rho_{v,Rdc} = 0.00$ %	< $\rho_{max.}$
Ratio of reinforcement for compression strut	$\rho_{v,Rd,max} = 0.00$ %	< $\rho_{max.}$
Ratio of reinforcement, maximum usage	$\rho_{max.} = 2.00$ %	

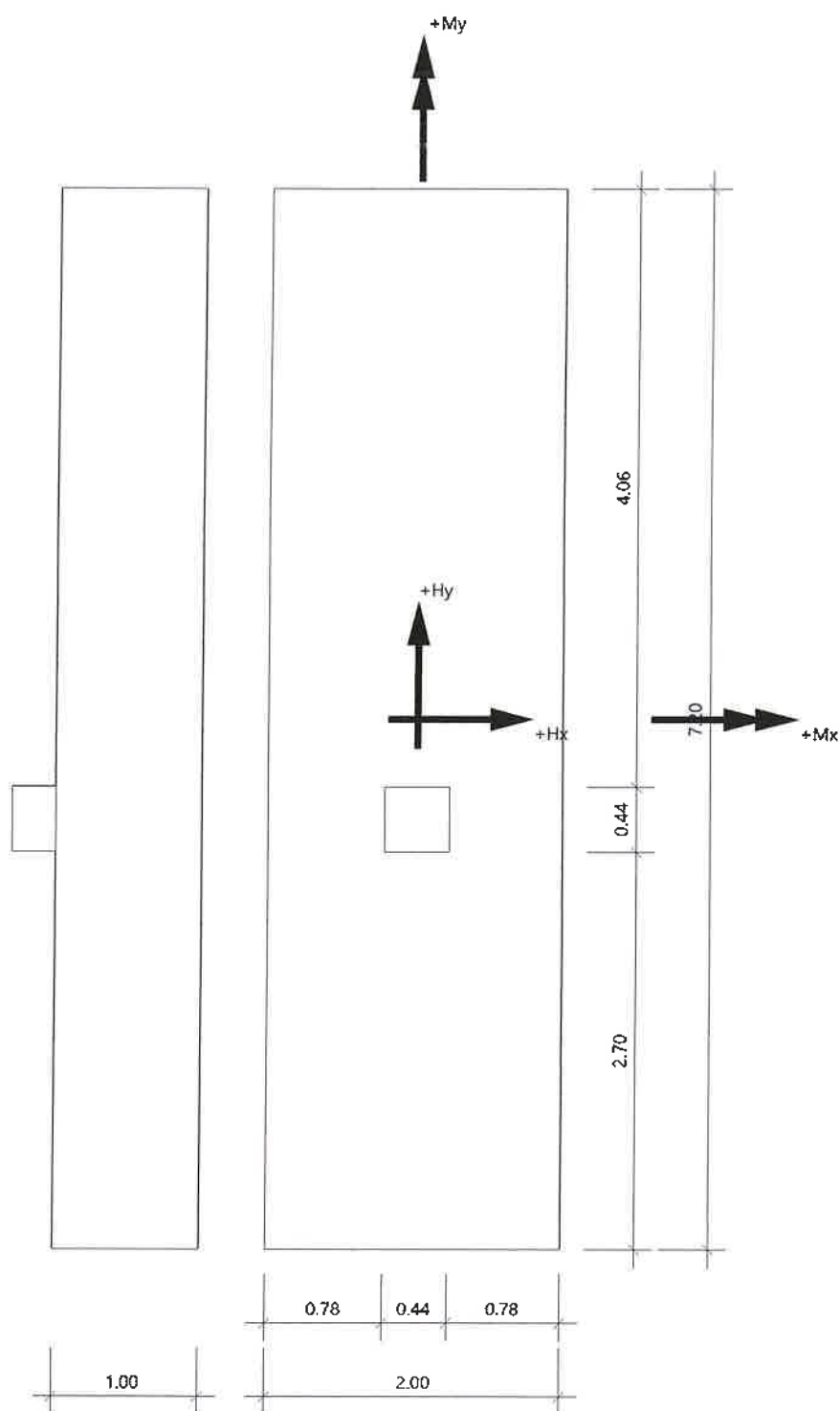
Determination of punching shear load:

Column load	$V_{Ed,col} = 88.0$ kN	88.0
Total vertical forces	$V_{Ed,red} = 69.1$ kN	
Layer in circular section	$x = 0.00$ m	relative to the column axis
Layer in circular section	$y = 0.00$ m	relative to the column axis

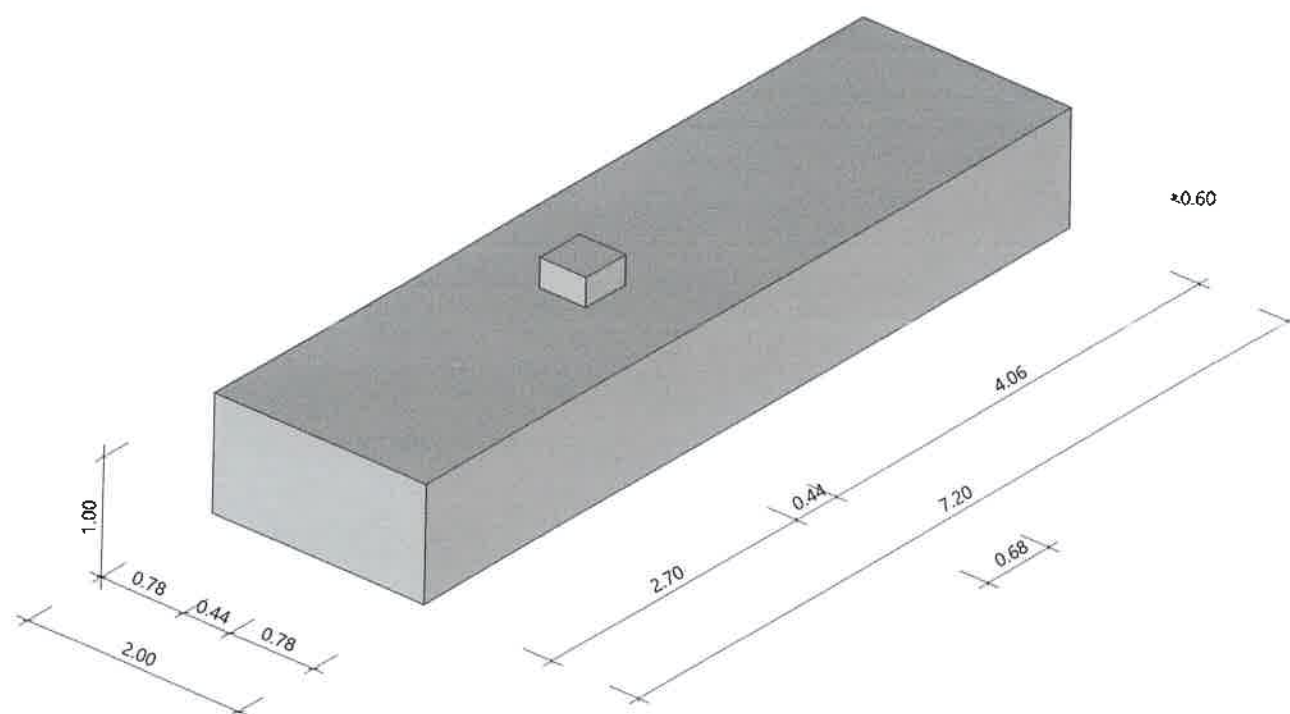
Factor Symmetry of rotation	$\beta = 1.15$	
Shear stress	$V_{Ed} = 0.003$ kN/cm ²	with β
Shear force, Edge of Column	$V_{Ed} = 0.01$ kN/cm ²	with β
Pre-factor	$C_{Rd,c} = 0.120$	
Scale factor	$k = 1.461$	
Shear slenderness	$\lambda = 0.903$	
Bearing capacity without punching reinforcement	$V_{Rd,c} = 0.15$ kN/cm ²	
Minimum bearing capacity	$V_{Rd,c,min} = 0.11$ kN/cm ²	
Bearing capacity of strut	$V_{Rd,max} = 0.36$ kN/cm ²	Edge of Column
Utilization for execution without stirrup	$\eta = 0.02$	
Utilization for compression strut	$\eta = 0.02$	
No stirrups required.		

Position: T-3A (radialni del)-V3 Temelj dveh stebrov (v.5 in 6)

Isolated Foundation (x64) FD+ 02/2025B (FRILO R-2025-2/P03)

System**Plan view**

Isometric



Foundation acc. to EN 1992-1-1:2004/A1:2014 and EN 1997-1:2004/AC:2009

Member

Member	Concrete	Steel	Width (x) m	Width (y) m	Height (z) m
Foundation Column	C 25/30 C 25/30	B 500(B) B 500(B)	2.00 0.44	7.20 0.44	1.00 0.00

Eccentricity $e_y = -0.68\text{m}$. Embedment depth of the foundation in the subsoil 0.60 m . Without groundwater Design value of the bearing pressure resistance $\sigma_{R,d} = 430.77\text{ kN/m}^2$.

Characteristic values

Durability

Requirements durability:

attack on concrete	X0
reinforc. corrosion	XC2
min. concrete class	C 25/30
Stirrup	$d_{s,b} = 16\text{ mm}$
long. reinforcement	$d_{s,l} = 16\text{ mm}$
allowance in design	$\Delta C_{dev} = 10\text{ mm}$
Stirrup	$c_{min,l} = 25\text{ mm}$
concrete coverage	$c_{nom,l} \approx 35\text{ mm}$
longitudinal bars	$c_{min,m} = 25\text{ mm}$
concrete coverage	$c_{nom,m} = 51\text{ mm}$ *1
laying dist. link	$c_l = 35\text{ mm}$
all. crack width	$w_{max} = 0.30\text{ mm}$
*1:with $c_{min,l}$	

Loads**Column loads - Design values**

No.	Description	N kN	M _{xI} kNm	M _{xII} kNm	M _{yI} kNm	M _{yII} kNm	H _{xI} kN	H _{xII} kN	H _{yI} kN	H _{yII} kN	Red N ¹	Red M ¹	DS ²	LS
1	RC11-maxPz (CO42)	693.4	34.30	34.30	30.10	30.10	5.9	5.9	-4.0	-4.0	1.40	1.40	DST	EQU
2	RC11-minPz (CO119)	-8.9	-29.00	-29.00	-22.80	-22.80	-5.9	-5.9	5.7	5.7	1.40	1.40	DST	STR
3	RC11-maxMx(CO58)	545.7	37.60	37.60	31.80	31.80	6.8	6.8	-5.3	-5.3	1.40	1.40	DST	STR
4	RC11-maxMy (CO66)	545.7	31.60	31.60	37.90	37.90	5.2	5.2	-6.8	-6.8	1.40	1.40	DST	STR
5	3 Stalna-G	140.2	1.30	1.30	1.20	1.20	-0.2	-0.2	0.2	0.2	1.00	1.00	DSP	SLS
6	RC12-SLS (CO178)	477.5	27.30	27.30	22.20	22.20	4.6	4.6	-3.7	-3.7	1.00	1.00	DSP	SLS
7	RC10 - Potres	175.1	65.00	65.00	62.20	62.20	15.0	15.0	-12.9	-12.9	1.00	1.00	DSE	EQU

1 : Reduction factors N for vertical loads and MH for moments and horizontal loads, used for generating missing limit states.
2 : DS: design situation P: Permanent A: accidental E: Earthquake T: transient
3 : only permanent loads

If a load case is not available in the required limit state for a verification, a load case with the same designation and required limit state is used. If there is no corresponding load case, a load case is generated using the reduction factors. Self-weight is taken into account in the calculation. Density Concrete : $\gamma = 24.00 \text{ kN/m}^3$. Total Foundation without socket resp. column $14.400 \text{ m}^3 / 345.60 \text{ kN}$. Horizontal loads act on the upper edge of the base or the column. Torsion from horizontal loads is not considered.

charakteristische Schnittgrößen in der Sohlfluge

LC No.	Description	V kN	ex m	My kNm	ey m	Mx kNm	Hx kN	Hy kN
1	Th.1.O.	837.7	0.04	36.00	-1.50	-1259.11	5.9	-4.0
1	Th.2.O.	837.7	0.04	36.00	-1.50	-1259.11	5.9	-4.0
2	Th.1.O.	466.0	-0.04	-20.50	0.13	62.11	-4.2	4.1
2	Th.2.O.	466.0	-0.04	-20.50	0.13	62.11	-4.2	4.1
3	Th.1.O.	646.4	0.04	27.57	-1.11	-715.85	4.9	-3.8
3	Th.2.O.	646.4	0.04	27.57	-1.11	-715.85	4.9	-3.8
4	Th.1.O.	646.4	0.05	30.79	-1.10	-712.64	3.7	-4.9
4	Th.2.O.	646.4	0.05	30.79	-1.10	-712.64	3.7	-4.9
5	Th.1.O.	538.2	0.002	1.00	-0.42	-228.32	-0.2	0.2
5	Th.2.O.	538.2	0.002	1.00	-0.42	-228.32	-0.2	0.2
6	Th.1.O.	692.9	0.04	26.80	-1.26	-871.04	4.6	-3.7
6	Th.2.O.	692.9	0.04	26.80	-1.26	-871.04	4.6	-3.7
7	Th.1.O.	537.9	0.14	77.20	-0.75	-402.77	15.0	-12.9
7	Th.2.O.	537.9	0.14	77.20	-0.75	-402.77	15.0	-12.9

Single loads

No.	Considered in load case	N kN	Action	ax m	ay m
1	1	-356.8	design value	0.00	2.10
2	2	22.0	design value	0.00	2.10
3	3	-280.1	design value	0.00	2.10
4	4	-280.1	design value	0.00	2.10
5	5	-62.8	ständig	0.00	2.10
6	6	-245.4	design value	0.00	2.10
7	7	-98.0	ständig	0.00	2.10

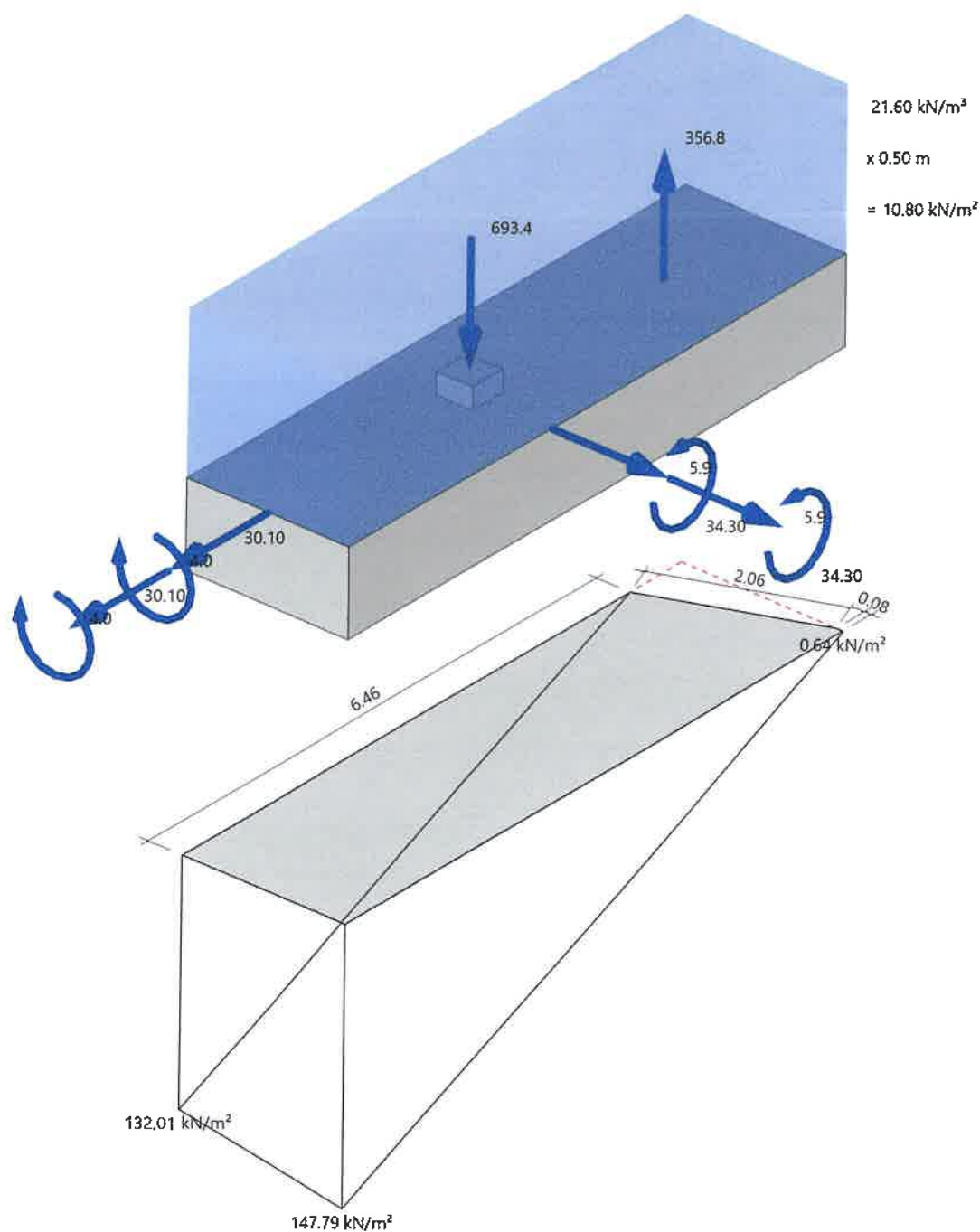
Area Loads

No.	Considered in load case	Action	h _E m	γ _E kN/m ³	q kN/m ²	R kN
1	1, 2, 3, 4	design value	0.50	21.60	0.00	155.5 ¹
2	5, 6, 7	design value	0.50	16.00	0.00	115.2 ¹

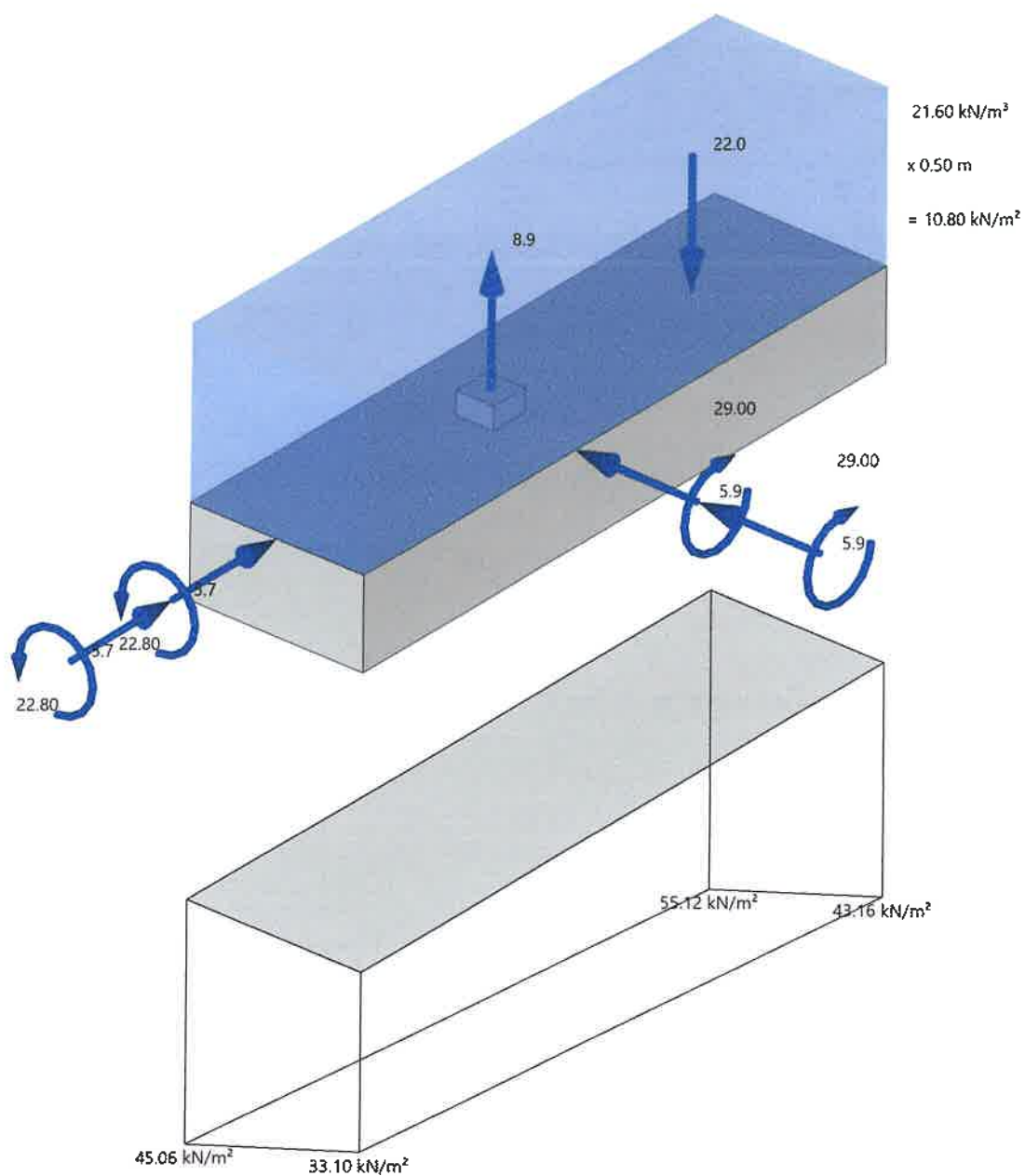
1 : Gross value. During the design, this load is reduced by the sleeve or column.

Load case graphics

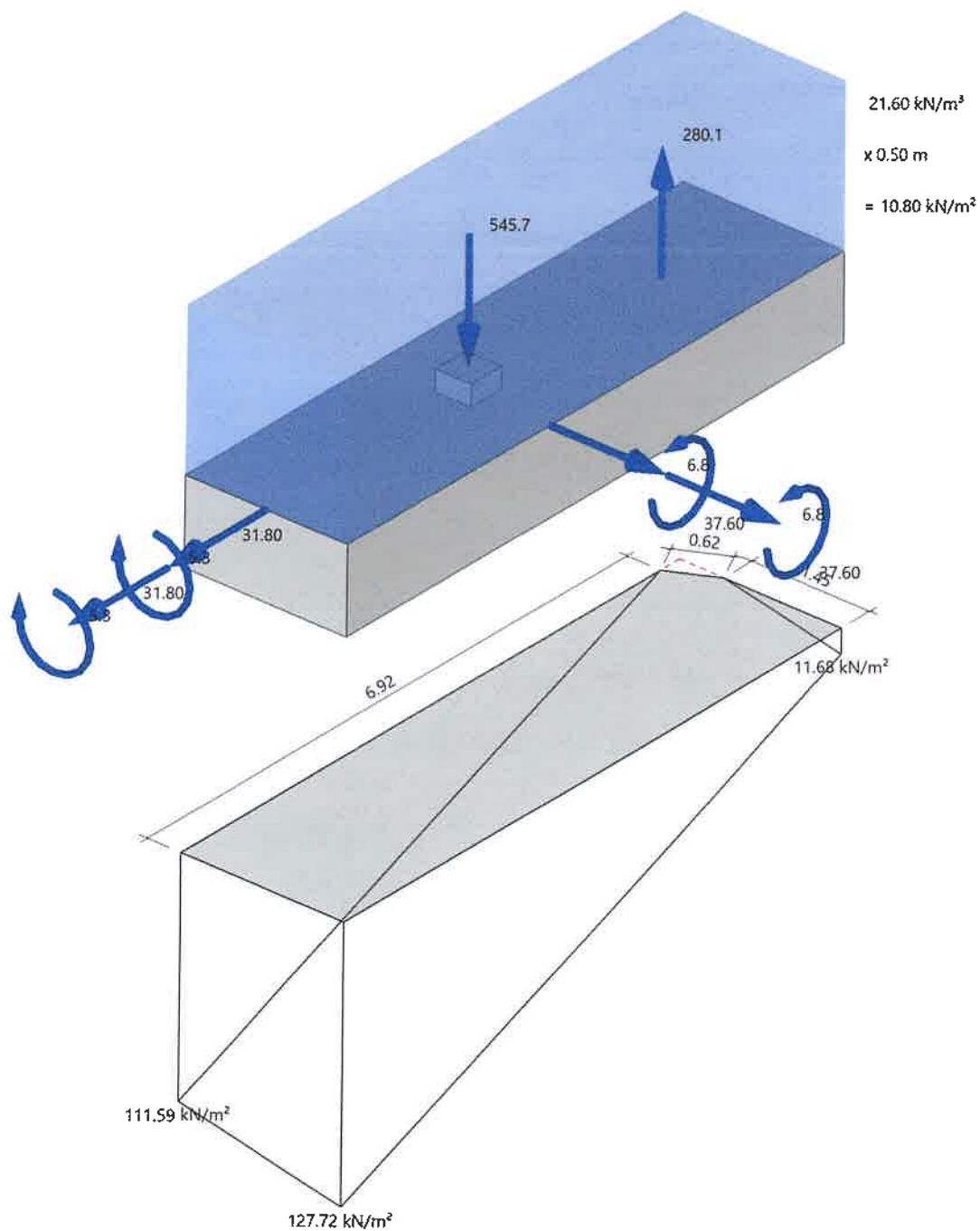
Load case 1 - RC11-maxPz (CO42) -



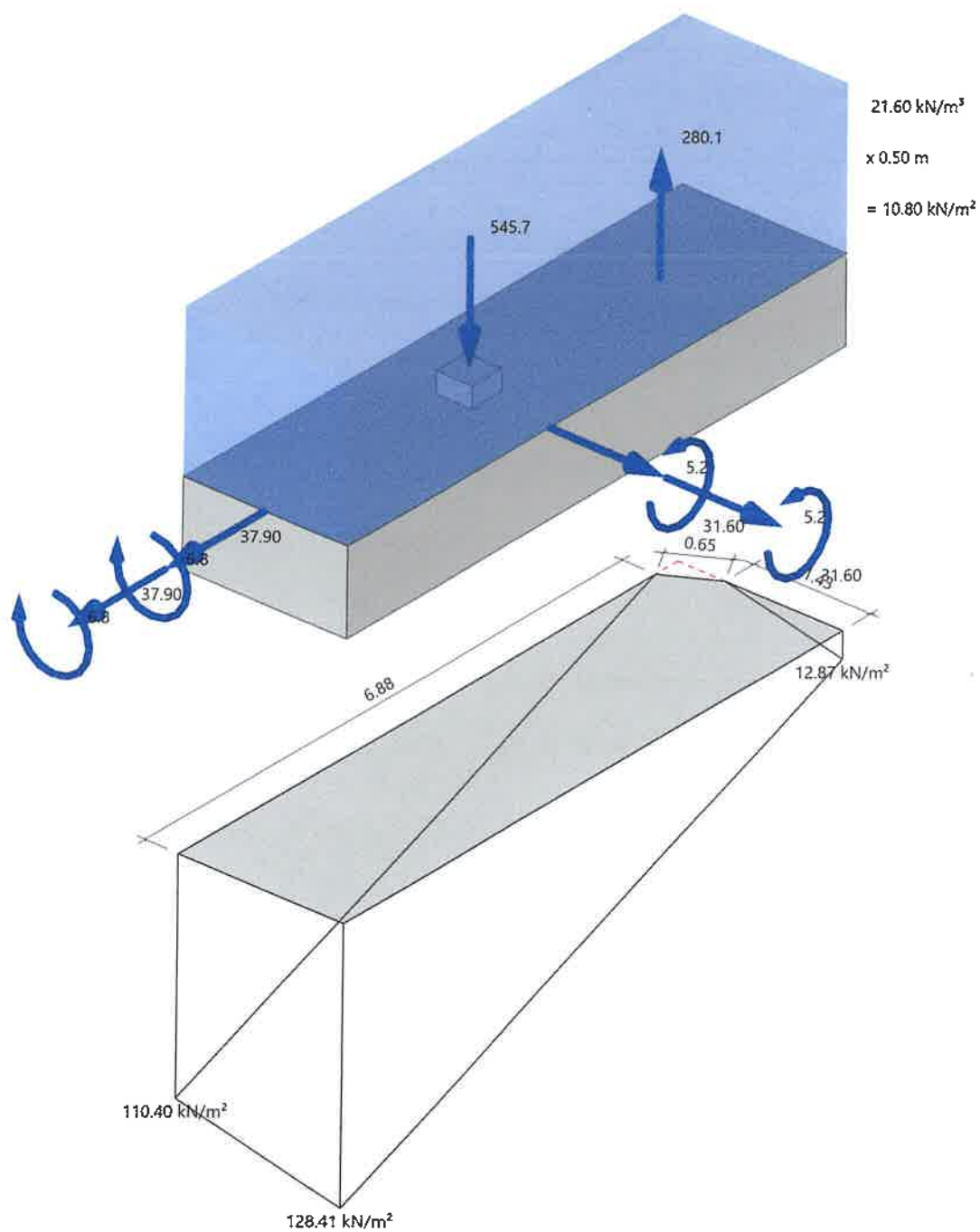
Load case 2 - RC11-minPz (CO119) -



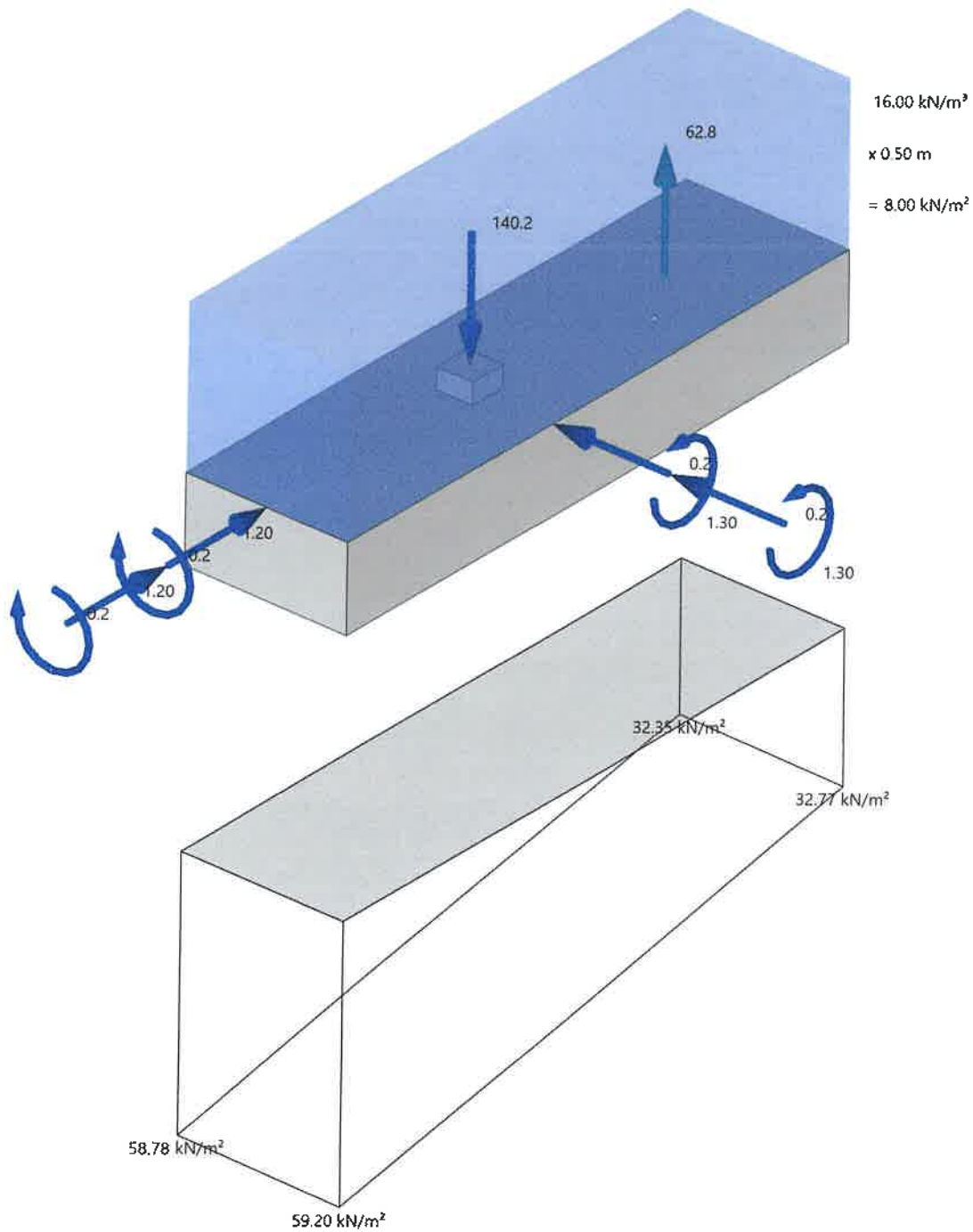
Load case 3 - RC11-maxMx(CO58) -



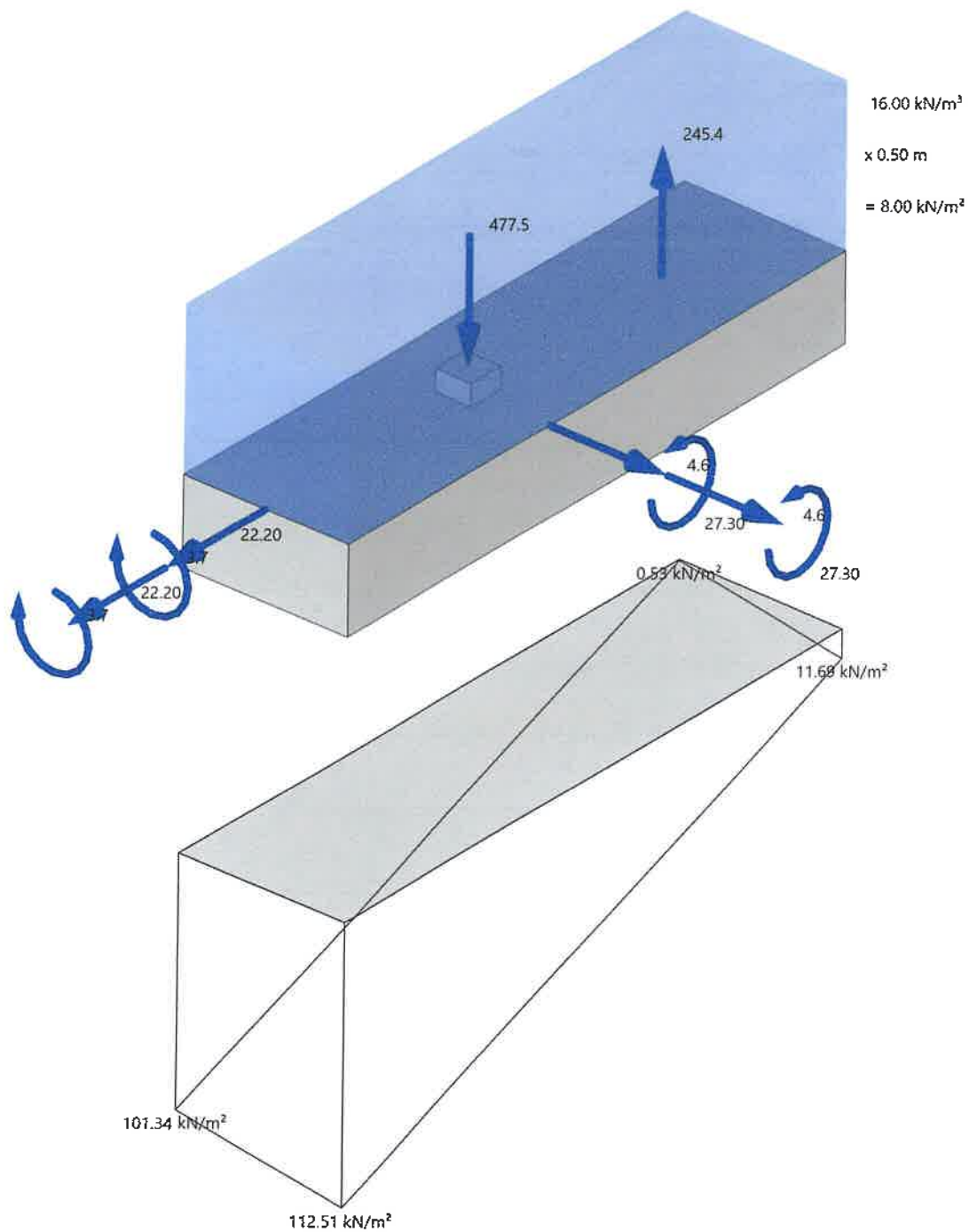
Load case 4 - RC11-maxMy (CO66) -



Load case 5 - Stalna-G -



Load case 6 - RC12-SLS (CO178) -



Check	Load case I	η_I	Load case II	η_{II}
Gaping joint only permanent loads ULS	5 ¹	0.41	5 ¹	0.04
Gaping joint permanent and variable loads ULS	1 ¹	0.43	1 ¹	0.43
Gaping joint only permanent loads SLS characteristic	5 ¹	0.36	5 ¹	0.03
Gaping joint permanent and variable loads SLS characteristic	1 ¹	0.40	1 ¹	0.40
Stability	1 ¹	0.56	1 ¹	0.56
Uplift check	1 ¹	0.30	1 ¹	0.30

Check	Load case I	η_I	Load case II	η_{II}
Simplified method ULS	1 ¹	0.25	1 ¹	0.28
Inclination of base pressure resultant	7 ¹	0.18	7 ¹	0.18

1 : Or corresponding load case with the same designation.

Preview Reinforcement

Type	Load case	cm ²
Bending $A_{s,u}$	1 ¹	90.4
Bending $A_{s,y,u}$	1 ¹	25.1
Bending $A_{s,o}$	7 ¹	91.4
Bending $A_{s,y,o}$	1 ¹	25.4

1 : Or corresponding load case with the same designation.

The inclination of the characteristic or representative base pressure resultant First order effects

$$\tan \delta = H/V = 0.04 \leq 0.20$$

The inclination of the characteristic or representative base pressure resultant makes the simplified check possible.

Design value of the bearing pressure resistance $\sigma_{R,d} = 400.00 \text{ kN/m}^2$

$\sigma_{R,d} = 430.77 \text{ kN/m}^2$. The design value of bearing pressure resistance has been specified directly. Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$.

Simplified method Resulting Load Case

No.	LS	DS	N _d kN	R ₀ kN	a' m	b' m	σ_d kN/m ²	$\sigma_{R,d}$ kN/m ²	η
1 _I	GEO	T	958.7	0.0	1.92	4.57	108.90	430.77	1 ¹ 0.25
1 _{II}	GEO	T	958.7	0.0	1.91	4.19	119.43	430.77	1 ¹ 0.28

1 : Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$

The bearing pressure is influenced by partial safety factors.

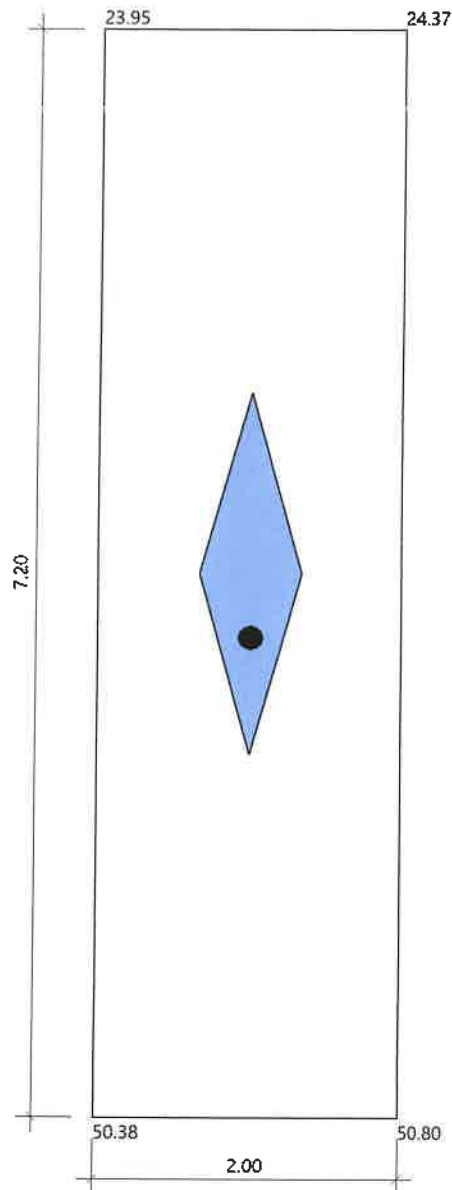
Gaping joint**Gaping joint to EN 1997-1:2004/AC:2009 Resulting Load Case First order effects and second order effects**

No.	LS	DS	N kN	e _x m	e _y m	a*/(1/6)	b*/(1/9)	η_G	$\eta_{G,Q}$
5 _I	EQU	P	497.4	0.002	-0.49	0.068/0.167	0.005/0.111	0.41	0.04
5 _{II}	EQU	P	497.4	0.002	-0.49				
1 _I	EQU	T	803.2	0.04	-1.57				
1 _{II}	EQU	T	803.2	0.04	-1.57	0.060/0.167	0.048/0.111	0.36	0.43
5 _I	SLS	P	538.2	0.002	-0.42				
5 _{II}	SLS	P	538.2	0.002	-0.42				
1 _I	SLS	T	837.7	0.04	-1.50	0.044/0.111	0.044/0.111	0.40	0.40
1 _{II}	SLS	T	837.7	0.04	-1.50				

$$a^* = e_x/b_x + e_y/b_y \quad b^* = (e_x/b_x)^2 + (e_y/b_y)^2 \quad \eta_G = a^*/(1/6) \quad \eta_{G,Q} = b^*/(1/9)$$

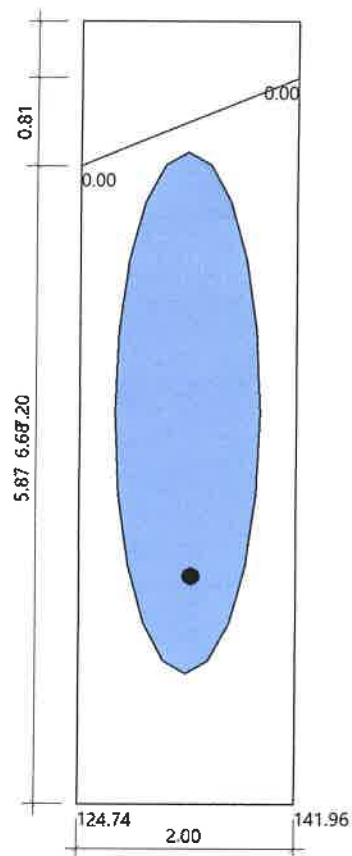
If no relevant characteristic load cases have been defined, the verification of the gaping joint has been reduced to a characteristic level using reduction factors.

Graphic only permanent loads



56

Graphic permanent and variable loads



Bending

Design Result Load Cases

LC	$M_{yu,Ed}$ kNm	$M_{xu,Ed}$ kNm	$M_{yo,Ed}$ kNm	$M_{xo,Ed}$ kNm	$A_{s,xu}$ cm ²	$A_{s,yu}$ cm ²	$A_{s,xo}$ cm ²	$A_{s,yo}$ cm ²
1 ¹	64.05	624.84	0.00	-76.28	90.4*	25.1*	0.0	25.4*
7	48.15	180.77	-19.24	-33.08	90.4*	25.1*	91.4*	25.4*
*: Minimal reinforcement by EN 1992-1-1:2004/A1:2014 9.2.1.1 (1)								
1 : Or corresponding load case with the same designation.								

Reinforcement layer Reinforcement in x-direction d1,x = 5.9 cm. Reinforcement layer Reinforcement in y-direction d1,y = 5.9 cm. Reinforcement layer Reinforcement in x-direction d2,x = 4.8 cm. Reinforcement layer Reinforcement in y-direction d2,y = 4.8 cm. Rounded bending moment from the axis of the column. 20% transverse reinforcement was taken into account.

Reinforcement in x-direction bottom (m,cm2)

from	-360.0	-180.0	180.0
to	-180.0	180.0	360.0
Width	180.0	360.0	180.0
	12Ø16/15.0	23Ø16/15.0	12Ø16/15.0
req. As	22.6	45.2	22.6
exist.As	24.1	46.2	24.1
req.as/m	12.6	12.6	12.6
exist.as/m	13.4	12.8	13.4
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in y-direction bottom (m,cm2)

from	-100.0	-50.0	50.0
to	-50.0	50.0	100.0
Width	50.0	100.0	50.0
	4Ø16/12.5	8Ø16/12.5	4Ø16/12.5
req. As	6.3	12.6	6.3
exist.As	8.0	16.1	8.0
req.as/m	12.6	12.6	12.6
exist.as/m	16.1	16.1	16.1
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

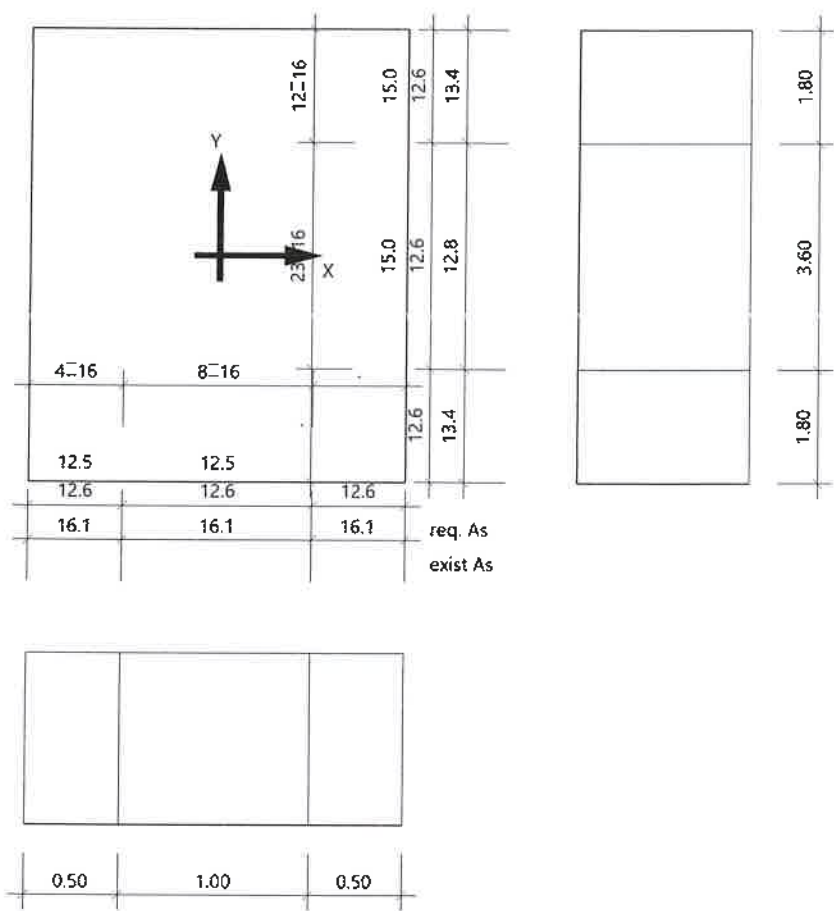
Reinforcement in x-direction top (m,cm2)

from	-360.0	360.0	720.0
to	360.0	720.0	46Ø16/15.0
Width	720.0	46Ø16/15.0	
	46Ø16/15.0		
req. As	91.4	92.5	12.7
exist.As	92.5	12.7	12.8
req.as/m	12.7	12.8	
exist.as/m	12.8		
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in y-direction top (m,cm2)

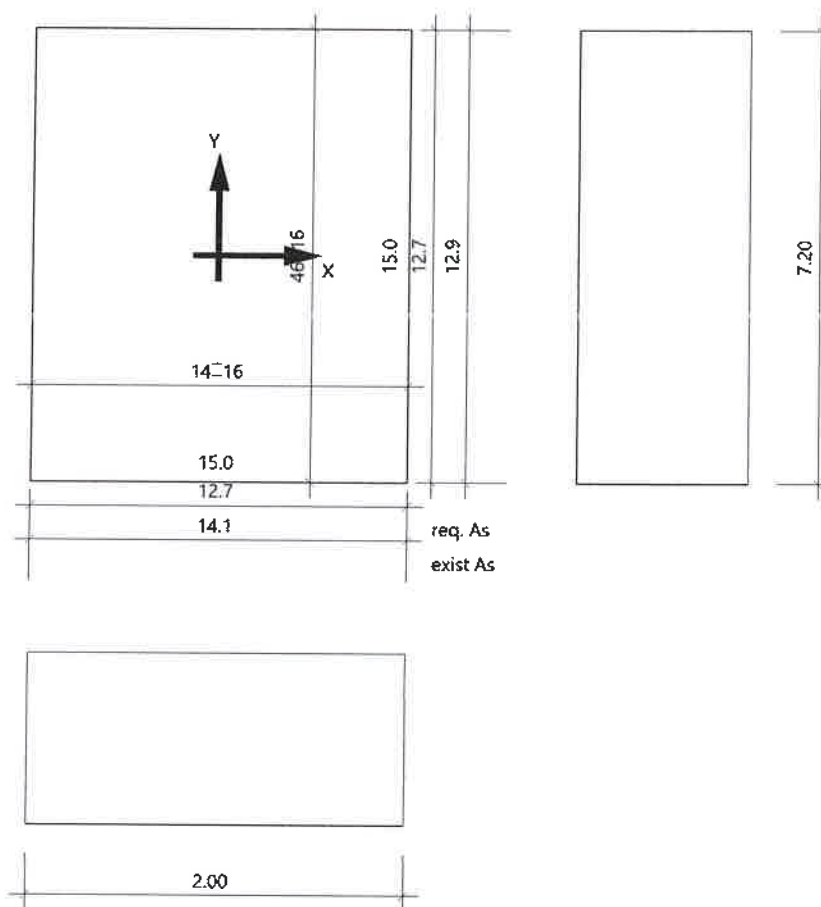
from	-100.0	100.0	200.0
to	100.0	200.0	14Ø16/15.0
Width	200.0	14Ø16/15.0	
	14Ø16/15.0		
req. As	25.4	28.2	14.1
exist.As	28.2	14.1	
req.as/m	12.7		
exist.as/m	14.1		
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement Distribution bottom in m, cm2/m



In order to ensure the transverse carrying capacity, the foundation has been dimensioned in the punching range for minimum moments according to equation (NA.6.54.1), provided the shear force determination has not led to higher values.

Reinforcement Distribution top in m, cm²/m



Osnovni podatki o modelu, Vhodni podatki - Konstrukcija

T-3B

(radialni del) Temelj dveh j. stebrov + AB steber tribune v osi Gj-6 in Gb-10 / Gj-D in Gb-A
(v. 9 in 10)

Datoteka: MS-Stadion-T3a_os-Gb10_v3.twp
Datum preračuna: 28.7.2025

Način preračuna: 2D model (Zp, Xr, Yr)

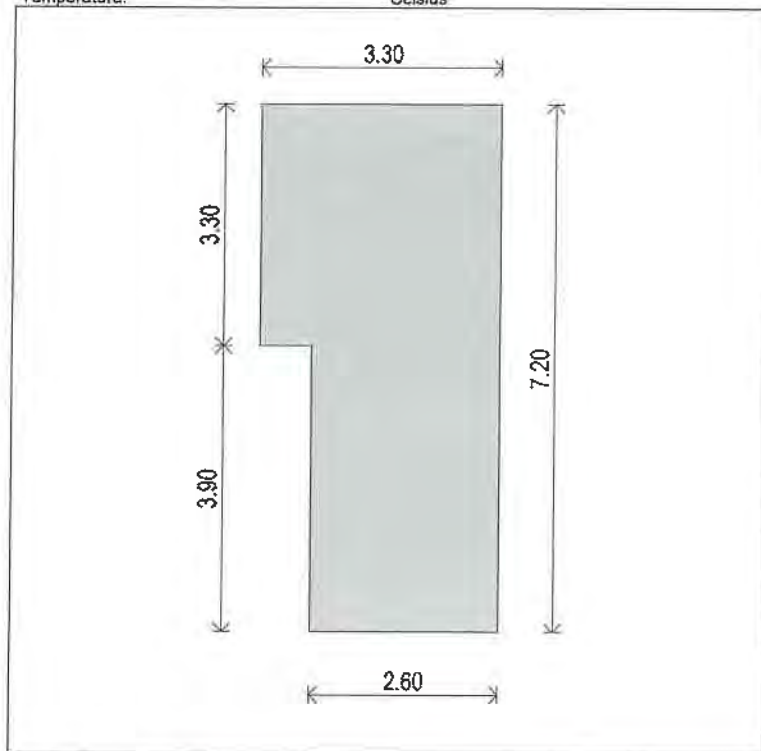
- ☒ Teorija I-ga reda ☐ Modalna analiza ☐ Stabilitetnost
☐ Teorija II-ga reda ☐ Seizmični preračun ☐ Faze gradnje
☐ Nelinearen preračun

Velikost modela

Število vozlišč: 170
Število ploskovnih elementov: 142
Število grednih elementov: 0
Število robnih elementov: 1704
Število osnovnih obtažnih primerov: 12
Število kombinacij obtežb: 30

Enote mer

Dolžina: m [cm,mm]
Sila: kN
Temperatura: Celsius



Tabele materialov

No	Naziv materiala	E[kN/m ²]	μ	γ [kN/m ³]	α [1/C]	Em[kN/m ²]	μ
1	Beton	3.100e+7	0.20	24.00	1.000e-5	3.100e+7	0.20

Seti plošč

No	d[m]	e[m]	Material	Tip preračuna	Ortotropija	E2[kN/m ²]	G[kN/m ²]	α
<1>	1.000	0.500	1	Debela plošča	Izotropna			

Seti površinskih podpor

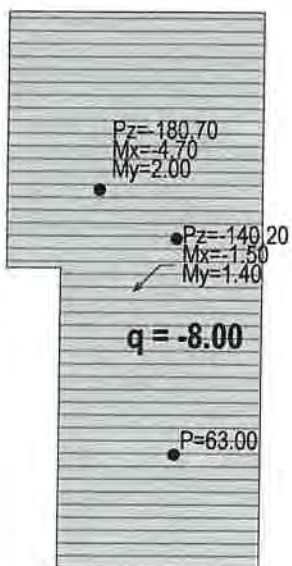
Set	K,R1	K,R2	K,R3
1	3.000e+4	3.000e+4	1.000e+4

Vhodni podatki - Obtežba

Lista obtežnih primerov

LC	Naziv
1	Lastna teža (g)
2	Stalna
3	Sneg-streha
4	Sneg-tribuna
5	Koristna
6	Veter
7	RC11-mejna jeklo
8	MSN - AB konstr.
9	Potres +X
10	Potres -X
11	Potres +Y
12	Potres -Y
13	Komb.: I+II
14	Komb.: I+II+III
15	Komb.: I+II+IV
16	Komb.: I+II+V
17	Komb.: I+II+VI
18	Komb.: I+II+0.5xIII+V
19	Komb.: I+II+0.5xIV+V
20	Komb.: I+II+III+0.6xVI
21	Komb.: I+II+0.5xIII+IV
22	Komb.: I+II+0.5xIII+IV+0.6xVI
23	Komb.: I+II+IV+V
24	Komb.: 1.35xI+1.35xII
25	Komb.: 1.35xI+1.35xII+1.5xIII
26	Komb.: 1.35xI+1.35xII+1.5xIV
27	Komb.: 1.35xI+1.35xII+0.75xIV+1.5xV
28	Komb.: 1.35xI+1.35xII+1.5xIII+0.9xVI
29	Komb.: 1.35xI+1.35xII+0.75xIII+1.5xV
30	Komb.: 1.35xI+1.35xII+0.75xIII+1.5xVI
31	Komb.: 1.35xI+1.35xII+0.75xIII+1.5xV+0.9xVI
32	Komb.: 1.35xI+1.35xII+1.5xIII+1.05xV+0.9xVI
33	Komb.: 1.35xI+1.35xII+V/III
34	Komb.: 1.35xI+1.35xII+V/II+V/III
35	Komb.: 0.9xI+1.1xII+1.5xIII+0.9xVI
36	Komb.: 0.9xI+1.1xII+1.5xIII+1.05xV
37	Komb.: 0.9xI+1.1xII+1.5xV
38	Komb.: 0.9xI+1.1xII+0.75xIII+1.5xV+0.9xVI
39	Komb.: 0.9xI+II+IX
40	Komb.: 0.9xI+II+X
41	Komb.: 0.9xI+II+XI
42	Komb.: 0.9xI+II+XII

Obt. 2: Stalna



Obt. 3: Sneg-streha



Obt. 4: Sneg-tribuna



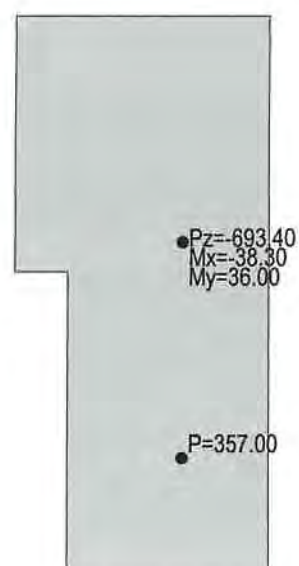
Obt. 5: Koristna



Obt. 6: Vetr



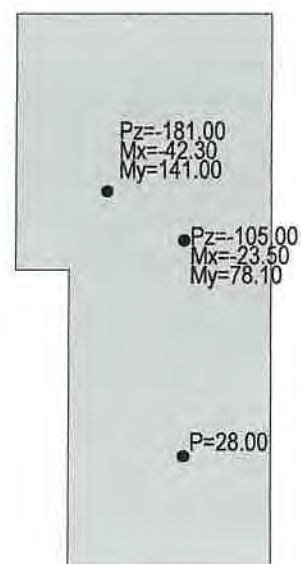
Obt. 7: RC11-mejna jeklo

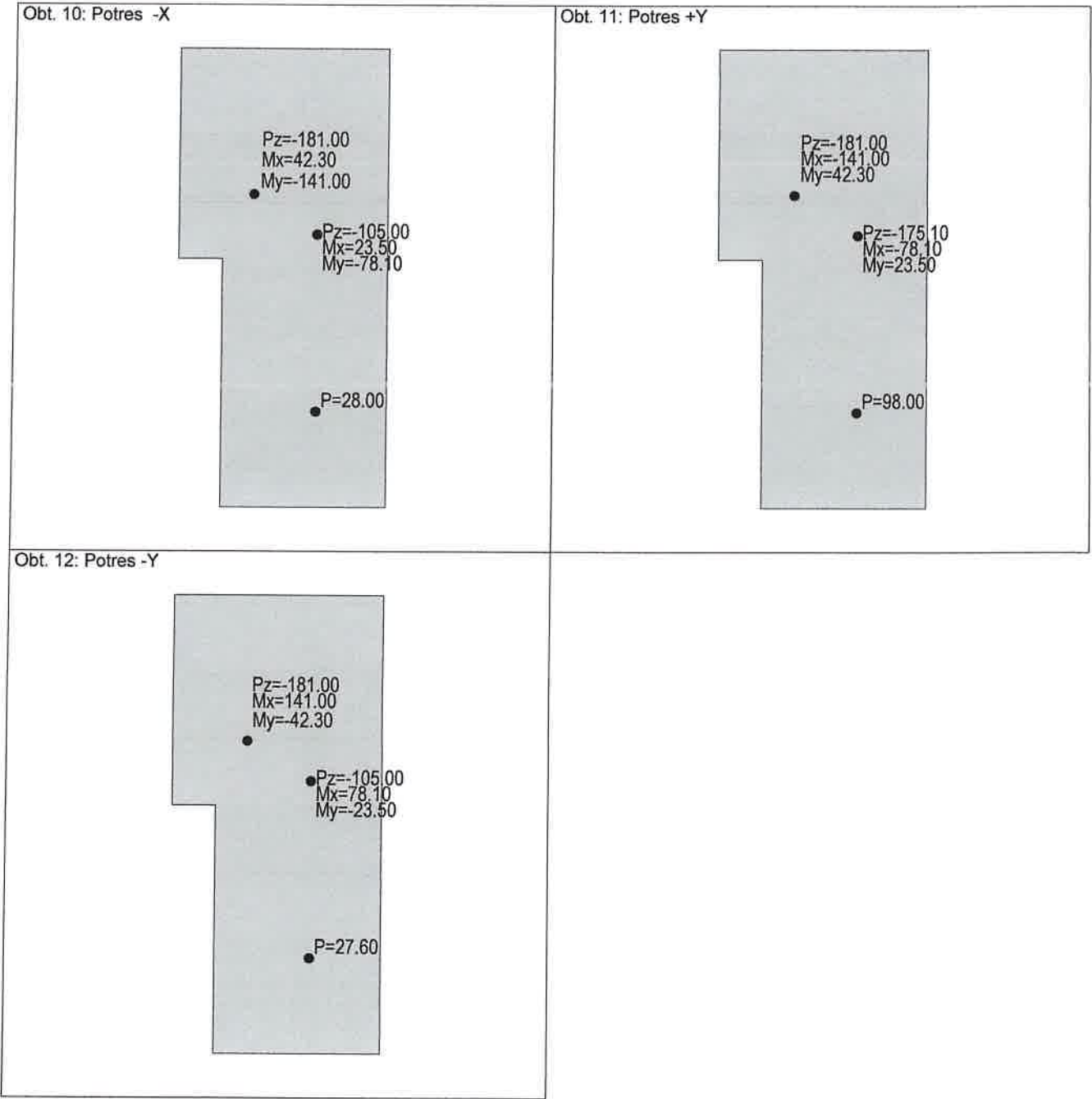


Obt. 8: MSN - AB konstr.



Obt. 9: Potres +X



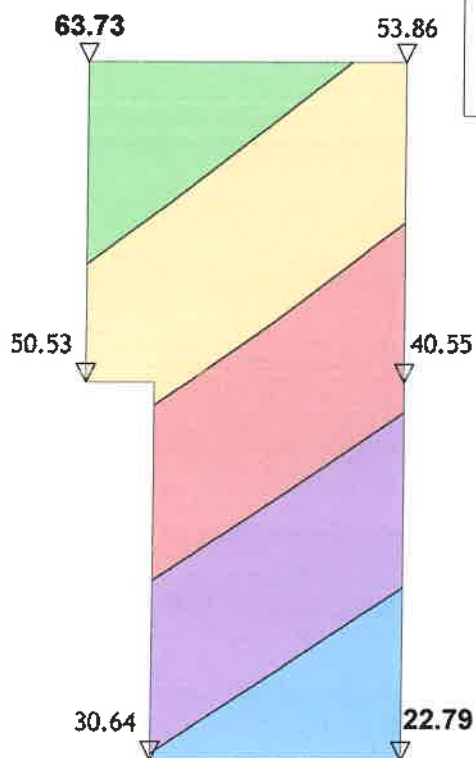


Statični preračun

Obt. 13: I+II

 σ_{tal} [kN/m²]

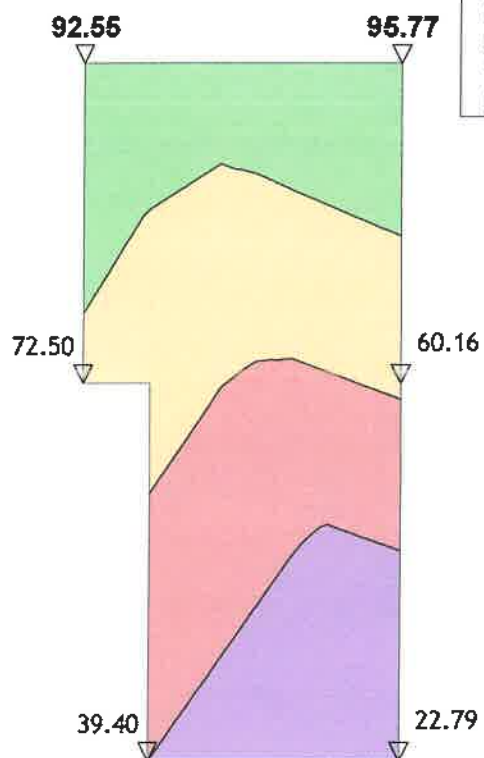
22.79
30.98
39.17
47.35
55.54
63.73



Obt. 44: [MSU] 13-23

 σ_{tal} [kN/m²]

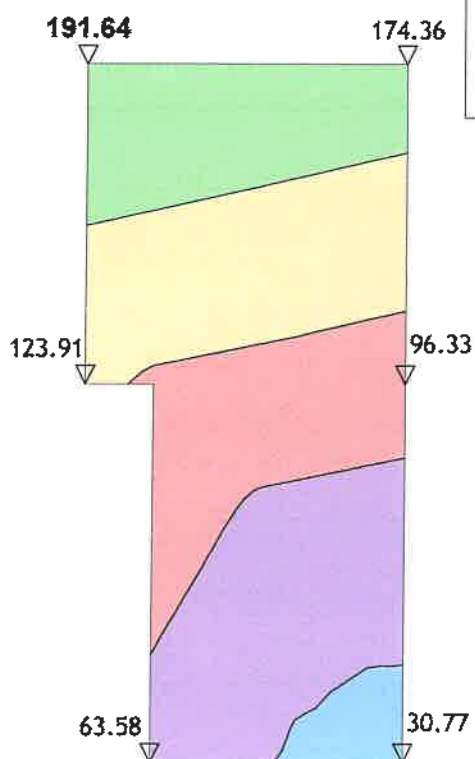
1.84
20.63
39.41
58.20
76.98
95.77

Vplivi v pov.podpori: max σ_{tal} = 63.73 / min σ_{tal} = 22.79 kN/m²

Obt. 43: [MSN] 24-42

 σ_{tal} [kN/m²]

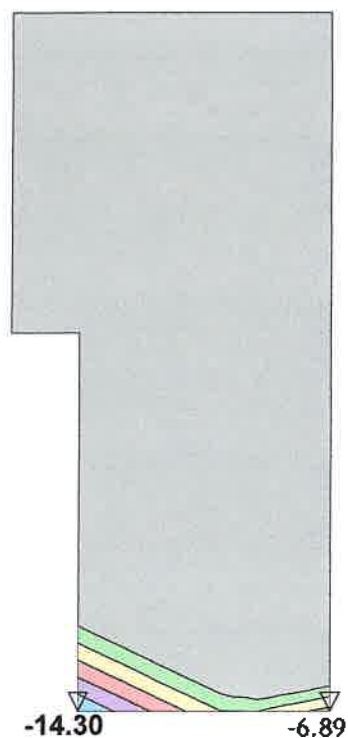
0.00
38.33
76.66
114.98
153.31
191.64

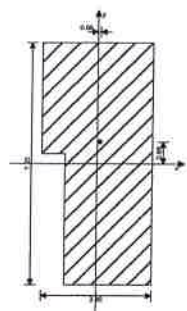
Vplivi v pov.podpori: max σ_{tal} = 95.77 / min σ_{tal} = 1.84 kN/m²

Obt. 43: [MSN] 24-42

 σ_{tal} [kN/m²]

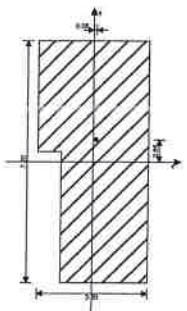
-14.30
-11.44
-8.58
-5.72
-2.86
0.00

Vplivi v pov.podpori: max σ_{tal} = 191.64 / min σ_{tal} = 0.00 kN/m²Vplivi v pov.podpori: max σ_{tal} = 0.00 / min σ_{tal} = -14.30 kN/m²



Rezultanta reakcij - Obtežba: 13

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: [0.00 m]					
Podpore: (63-45-125-170-29-1-63)					
13	0.00	0.00	930.86	0.08	0.66



Rezultanta reakcij - Obtežba: 24

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: [0.00 m]					
Podpore: (63-45-125-170-29-1-63)					
24	0.0	0.0	1256.7	0.08	0.66

temelj: $L_x = 3,30$ m

$B_y = 7,20$ m

ekscentričnost

$e_x = 0,08$ m

<

$L_x / 6 = 0,55$ m

<

$L_x / 3 = 1,10$ m

$e_y = 0,66$ m

<

$L_y / 6 = 1,20$ m

<

$L_y / 3 = 2,40$ m

za stalno obtežbo:

$a^* = e_x / L_x + e_y / L_y$ kontrola: $a^* / (1/6) < 1,0$

$a^* = 0,1159$

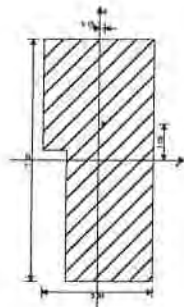
$a^* / (1/6) = 0,70$ **USTREZA**

za občasno obtežbo:

$b^* = (e_x / L_x)^2 + (e_y / L_y)^2$ kontrola: $b^* / (1/9) < 1,0$

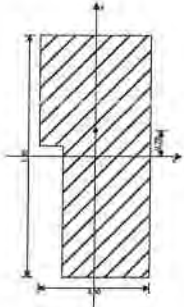
$b^* = 0,0090$

$b^* / (1/9) = 0,08$ **USTREZA**



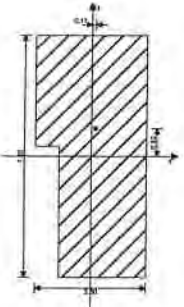
Rezultanta reakcij - Obtežba: 14

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: {0.00 m}					
Podpore: (63-45-125-170-29-1-63)					
14	0.0	0.0	1058.9	0.15	1.08



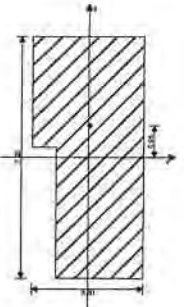
Rezultanta reakcij - Obtežba: 16

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: {0.00 m}					
Podpore: (63-45-125-170-29-1-63)					
16	0.0	0.0	1085.9	0.00	0.76



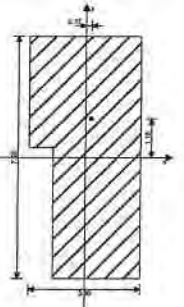
Rezultanta reakcij - Obtežba: 17

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: {0.00 m}					
Podpore: (63-45-125-170-29-1-63)					
17	0.00	0.00	973.86	0.11	0.82



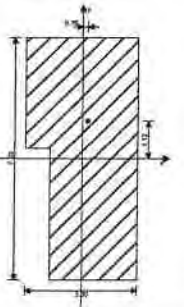
Rezultanta reakcij - Obtežba: 18

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: {0.00 m}					
Podpore: (63-45-125-170-29-1-63)					
18	0.0	0.0	1149.9	0.00	0.95



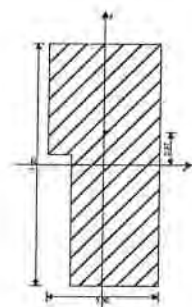
Rezultanta reakcij - Obtežba: 20

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: {0.00 m}					
Podpore: (63-45-125-170-29-1-63)					
20	0.0	0.0	1084.7	0.17	1.15



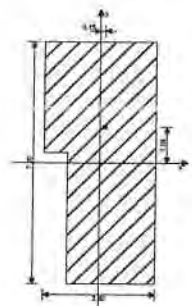
Rezultanta reakcij - Obtežba: 25

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: {0.00 m}					
Podpore: (63-45-125-170-29-1-63)					
25	0.0	0.0	1448.7	0.16	1.12



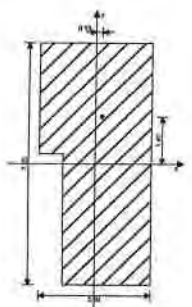
Rezultanta reakcij - Obtežba: 29

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: [0.00 m]					
Podpore: (63-45-125-170-29-1-63)					
29	0.0	0.0	1585.2	0.00	0.97



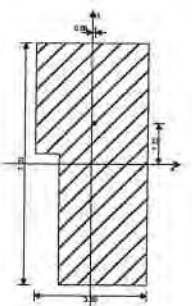
Rezultanta reakcij - Obtežba: 30

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: [0.00 m]					
Podpore: (63-45-125-170-29-1-63)					
30	0.0	0.0	1417.2	0.15	1.06



Rezultanta reakcij - Obtežba: 35

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: [0.00 m]					
Podpore: (63-45-125-170-29-1-63)					
35	0.0	0.0	1153.7	0.19	1.40



Rezultanta reakcij - Obtežba: 41

LC	Rx[kN]	Ry[kN]	Rz[kN]	ex[m]	ey[m]
Nivo: [0.00 m]					
Podpore: (63-45-125-170-29-1-63)					
41	0.0	0.0	1138.5	0.08	1.22

temelj: $L_x = 3.30$ m $B_y = 7.20$ m

ekscentričnost

 $e_x = 0.19$ m $e_y = 1.40$ m< $L_x/6 = 0.55$ m< $L_x/3 = 1.10$ m> $L_y/6 = 1.20$ m< $L_y/3 = 2.40$ m

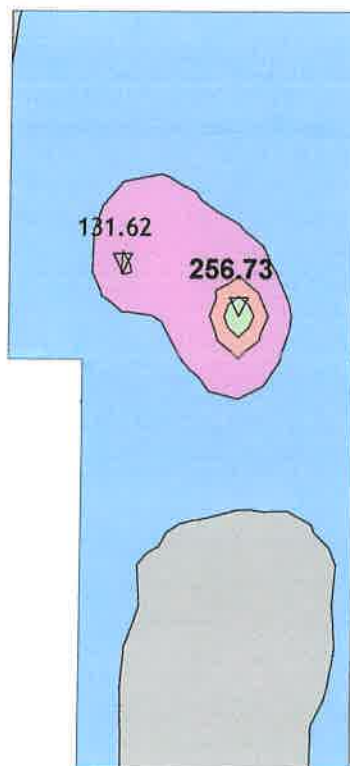
za občasno obtežbo:

 $b^* = (e_x/L_x)^2 + (e_y/L_y)^2$ kontrola: $b^*/(1/9) < 1.0$ $b^* = 0.0411$ $b^*/(1/9) = 0.37$ USTREZA

Obt. 43: [MSN] 24-42

Mx [kNm/m]

0.00
64.19
128.37
192.56
256.74

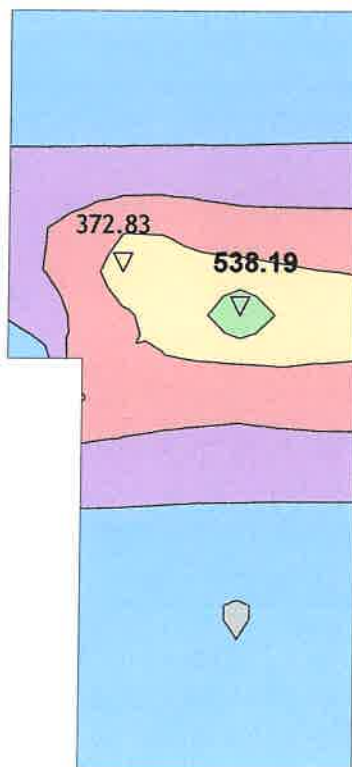


Vplivi v plošči: max Mx= 256.73 / min Mx= 0.00 kNm/m

Obt. 43: [MSN] 24-42

My [kNm/m]

0.00
107.64
215.28
322.91
430.55
538.19

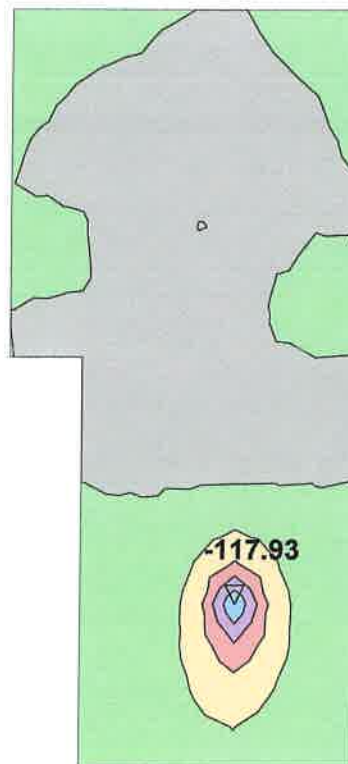


Vplivi v plošči: max My= 538.19 / min My= 0.00 kNm/m

Obt. 43: [MSN] 24-42

Mx [kNm/m]

-117.94
-94.35
-70.76
-47.18
-23.59
0.00

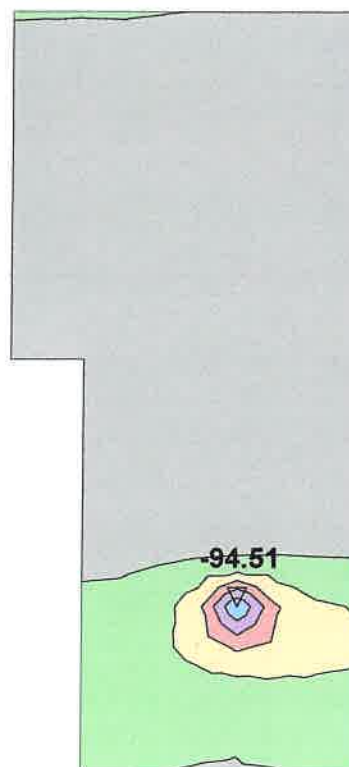


Vplivi v plošči: max Mx= 0.00 / min Mx= -117.93 kNm/m

Obt. 43: [MSN] 24-42

My [kNm/m]

-94.51
-75.61
-56.71
-37.80
-18.90
0.00



Vplivi v plošči: max My= 0.00 / min My= -94.51 kNm/m

Dimenzioniranje (beton)

Merodajna obtežba: 24-42
EC2 (EN 1992-1-1:2004), C 25, S500N, a=6.00 cm

Aa - sp.cona - Smer 1 [cm²/m]



Aa - sp.cona - Smer 1 - max Aa1,s= 6.37 cm²/m

Merodajna obtežba: 24-42
EC2 (EN 1992-1-1:2004), C 25, S500N, a=6.00 cm

Aa - zg.cona - Smer 1 [cm²/m]



Aa - zg.cona - Smer 1 - max Aa1,z= -2.91 cm²/m

Merodajna obtežba: 24-42
EC2 (EN 1992-1-1:2004), C 25, S500N, a=6.00 cm

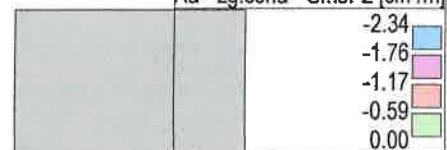
Aa - sp.cona - Smer 2 [cm²/m]



Aa - sp.cona - Smer 2 - max Aa2,s= 13.47 cm²/m

Merodajna obtežba: 24-42
EC2 (EN 1992-1-1:2004), C 25, S500N, a=6.00 cm

Aa - zg.cona - Smer 2 [cm²/m]



Aa - zg.cona - Smer 2 - max Aa2,z= -2.33 cm²/m

KARLOVŠEK d.o.o.

Ulica Antona Skoka 7

1230

Domžale

Tel.: 00386-1-7220720

E-Mail: karlovsek7@sioi.net

Projekt: Stadion-MS-Fazanerija

Position: T-4a-R1

25.07.2025

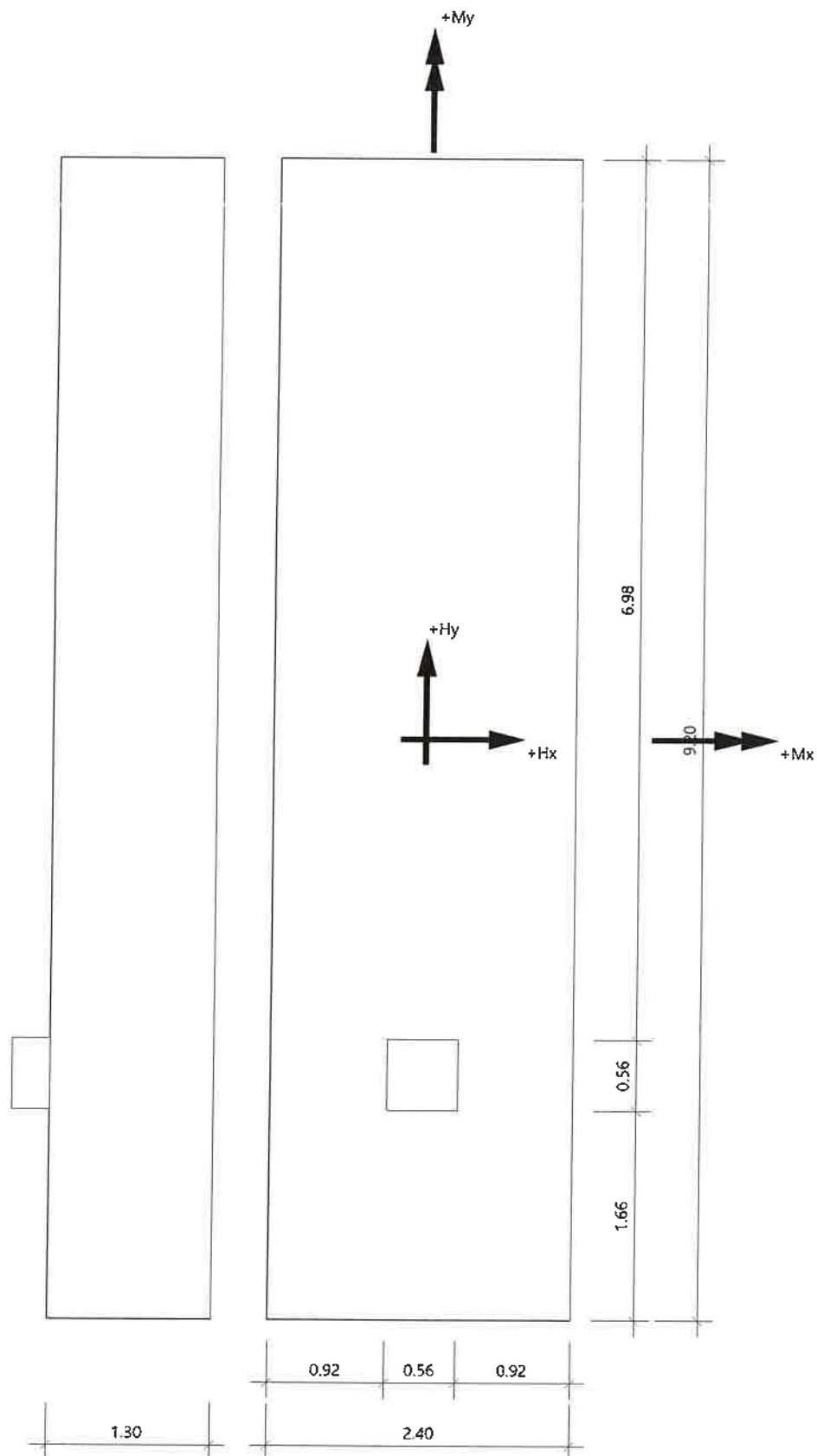
Seite: 1

Position: ~~T-4a-R1~~ T4 Temelj treh stebrov (v.11, 12 in 13)

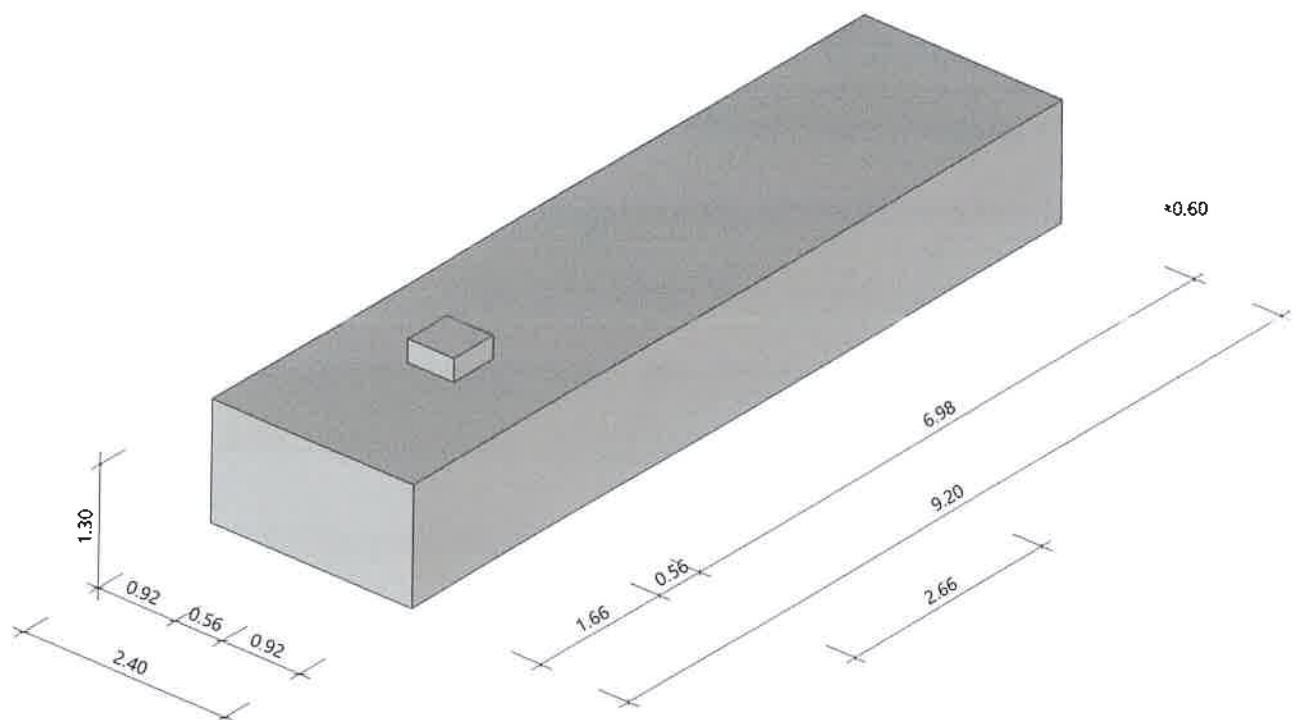
Isolated Foundation (x64) FD+ 02/2025B (FRIL0 R-2025-2/P03)

System

Plan view



Isometric



Foundation acc. to EN 1992-1-1:2004/A1:2014 and EN 1997-1:2004/AC:2009

Member

Member	Concrete	Steel	Width (x) m	Width (y) m	Height (z) m
Foundation	C 25/30	B 500(B)	2.40	9.20	1.30
Column	C 25/30	B 500(B)	0.56	0.56	0.60

Eccentricity $e_y = -2.66$ m. Embedment depth of the foundation in the subsoil 0.60 m. Without groundwater Design value of the bearing pressure resistance $\sigma_{R,d} = 430.77$ kN/m².

Characteristic values

Durability

Requirements durability:

attack on concrete	X0
reinforc. corrosion	XC2
min. concrete class	C 25/30
Stirrup	$d_{s,b} = 16$ mm
long. reinforcement	$d_{s,l} \approx 16$ mm
allowance in design	$\Delta C_{dev} = 10$ mm
Stirrup	$c_{min,l} = 25$ mm
concrete coverage	$c_{nom,l} = 35$ mm
longitudinal bars	$c_{min,m} \approx 25$ mm
concrete coverage	$c_{nom,m} \approx 51$ mm
laying dist. link	$c_l = 35$ mm
all. crack width	$w_{max} = 0.30$ mm
*1: with $c_{min,l}$	

Loads**Column loads - Design values**

No.	Description	N kN	M _{xi} kNm	M _{xli} kNm	M _{yi} kNm	M _{yli} kNm	H _{xi} kN	H _{xli} kN	H _{yi} kN	H _{yli} kN	Red N ¹	Red M ^{H1}	DS ²	LS
1	RC11-maxPz (CO33)	1041.6	82.70	82.70	5.10	5.10	131.8	131.8	-58.7	-58.7	1.40	1.40	DST	STR
2	RC11-minPz-v12(CO41)	1027.6	82.60	82.60	3.30	3.30	27.8	27.8	-148.6	-148.6	1.40	1.40	DST	STR
3	RC11-minPz (CO116)	-121.8	-105.70	-105.70	15.90	15.90	51.3	51.3	184.2	184.2	1.40	1.40	DST	STR
4	RC11-maxMy(CO58)	842.4	84.80	84.80	21.80	21.80	73.5	73.5	-153.6	-153.6	1.40	1.40	DST	STR
5	RC11-maxMx (CO57)	851.9	260.10	260.10	33.70	33.70	20.6	20.6	-53.3	-53.3	1.40	1.40	DST	STR
6	RC11-minMx (CO52)	-29.0	-261.60	-261.60	66.10	66.10	28.4	28.4	54.1	54.1	1.40	1.40	DST	STR
7	3 Stalna-G	229.8	2.20	2.20	19.10	19.10	11.0	11.0	-0.5	-0.5	1.00	1.00	DSP	SLS
8	RC12-SLS (CO169)	717.7	136.80	136.80	15.20	15.20	12.5	12.5	-26.2	-26.2	1.00	1.00	DSP	SLS
9	RC10-Potres	300.4	272.00	272.00	32.00	32.00	16.7	16.7	-64.4	-64.4	1.00	1.00	DSE	EQU

1 : Reduction factors N for vertical loads and MH for moments and horizontal loads, used for generating missing limit states.
2 : DS: design situation P: Permanent A: accidental E: Earthquake T: transient
3 : only permanent loads

If a load case is not available in the required limit state for a verification, a load case with the same designation and required limit state is used. If there is no corresponding load case, a load case is generated using the reduction factors. Self-weight is taken into account in the calculation. Density Concrete : $\gamma = 24.00 \text{ kN/m}^3$. Total Foundation without socket resp. column $28.704 \text{ m}^3 / 688.90 \text{ kN}$. Horizontal loads act on the upper edge of the base or the column. Torsion from horizontal loads is not considered.

charakteristische Schnittgrößen in der Sohlfuge

LC No.	Description	V kN	ex m	My kNm	ey m	Mx kNm	Hx kN	Hy kN
1	Th.1.O.	1175.6	0.11	126.03	-1.56	-1836.48	94.1	-41.9
1	Th.2.O.	1175.6	0.11	126.03	-1.56	-1836.48	94.1	-41.9
2	Th.1.O.	1122.7	0.03	28.17	-1.75	-1967.19	19.9	-106.1
2	Th.2.O.	1122.7	0.03	28.17	-1.75	-1967.19	19.9	-106.1
3	Th.1.O.	801.8	0.07	58.99	0.83	662.87	36.6	131.6
3	Th.2.O.	801.8	0.07	58.99	0.83	662.87	36.6	131.6
4	Th.1.O.	1133.1	0.07	83.82	-1.35	-1530.79	52.5	-109.7
4	Th.2.O.	1133.1	0.07	83.82	-1.35	-1530.79	52.5	-109.7
5	Th.1.O.	1123.3	0.04	43.20	-1.41	-1586.15	14.7	-38.1
5	Th.2.O.	1123.3	0.04	43.20	-1.41	-1586.15	14.7	-38.1
6	Th.1.O.	923.8	0.08	73.59	0.67	614.47	20.3	38.6
6	Th.2.O.	923.8	0.08	73.59	0.67	614.47	20.3	38.6
7	Th.1.O.	964.0	0.03	26.89	-0.38	-362.60	11.0	-0.5
7	Th.2.O.	964.0	0.03	26.89	-0.38	-362.60	11.0	-0.5
8	Th.1.O.	1168.8	0.03	31.45	-1.55	-1816.66	12.5	-26.2
8	Th.2.O.	1168.8	0.03	31.45	-1.55	-1816.66	12.5	-26.2
9	Th.1.O.	984.3	0.05	53.71	-0.88	-864.32	16.7	-64.4
9	Th.2.O.	984.3	0.05	53.71	-0.88	-864.32	16.7	-64.4

Single loads

No.	Considered in load case	N kN	Action	ax m	ay m
1	1	-466.5	design value	0.00	0.12
2	1	106.3	design value	0.00	3.90
3	2	-501.0	design value	0.00	0.12
4	2	80.8	design value	0.00	3.90
5	3	220.3	design value	0.00	0.12
6	3	59.6	design value	0.00	3.90
7	4	-328.6	design value	0.00	0.12
8	4	108.1	design value	0.00	3.90
9	5	-350.6	design value	0.00	0.12
10	5	106.9	design value	0.00	3.90
11	6	249.9	design value	0.00	0.12
12	6	108.0	design value	0.00	3.90
13	7	-19.8	ständig	0.00	0.12
14	7	65.1	ständig	-0.10	3.90
15	8	-315.0	design value	0.00	0.12
16	8	77.2	design value	0.00	3.90
17	9	-82.0	ständig	0.00	0.12
18	9	77.0	ständig	0.00	3.90

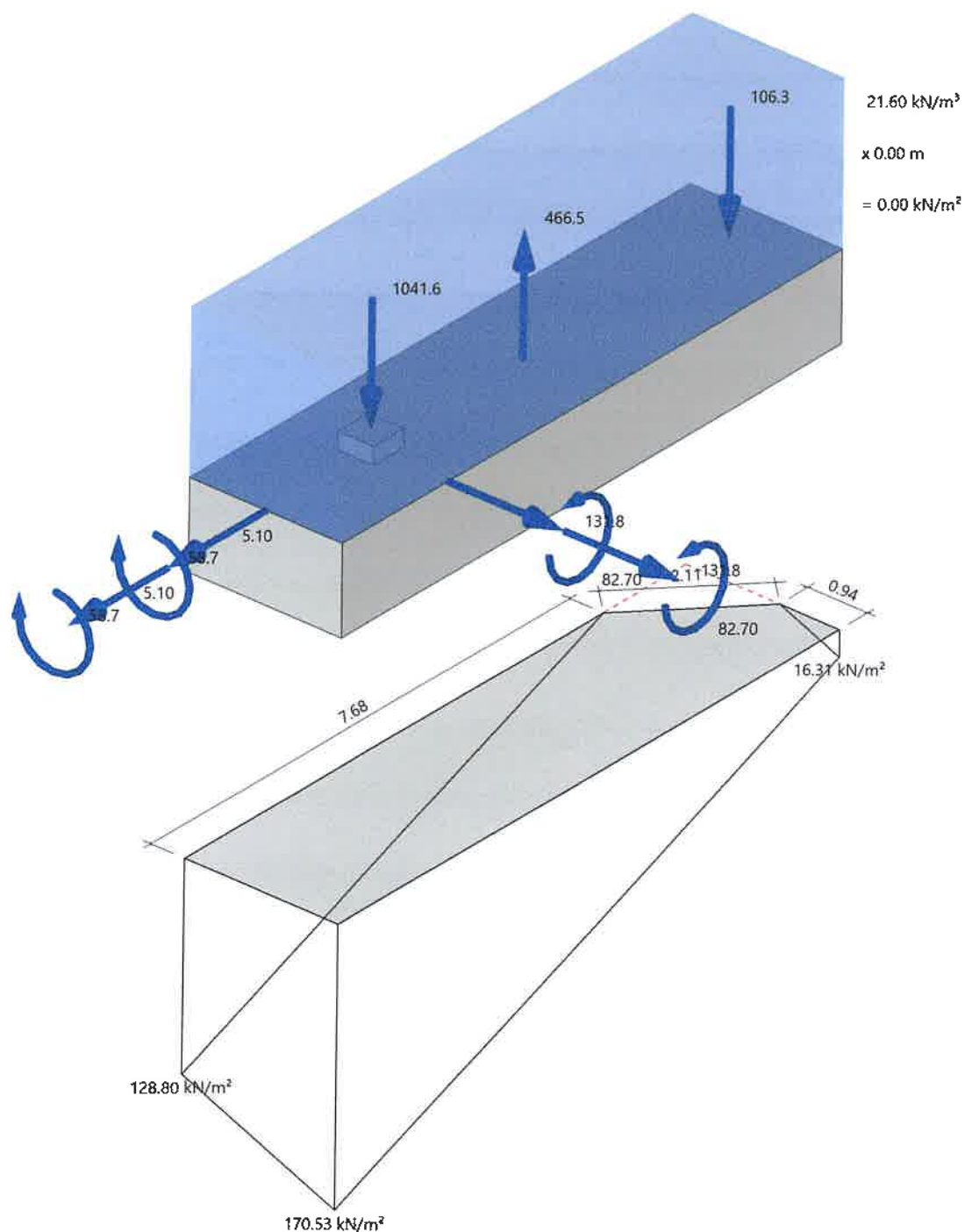
Area Loads

No.	Considered in load case	Action	h_E m	γ_E kN/m ³	q kN/m ²	R kN
1	1, 2, 3, 4, 5, 6	design value	0.00	21.60	0.00	0.0 ¹
2	7, 8, 9	design value	0.00	16.00	0.00	0.0 ¹

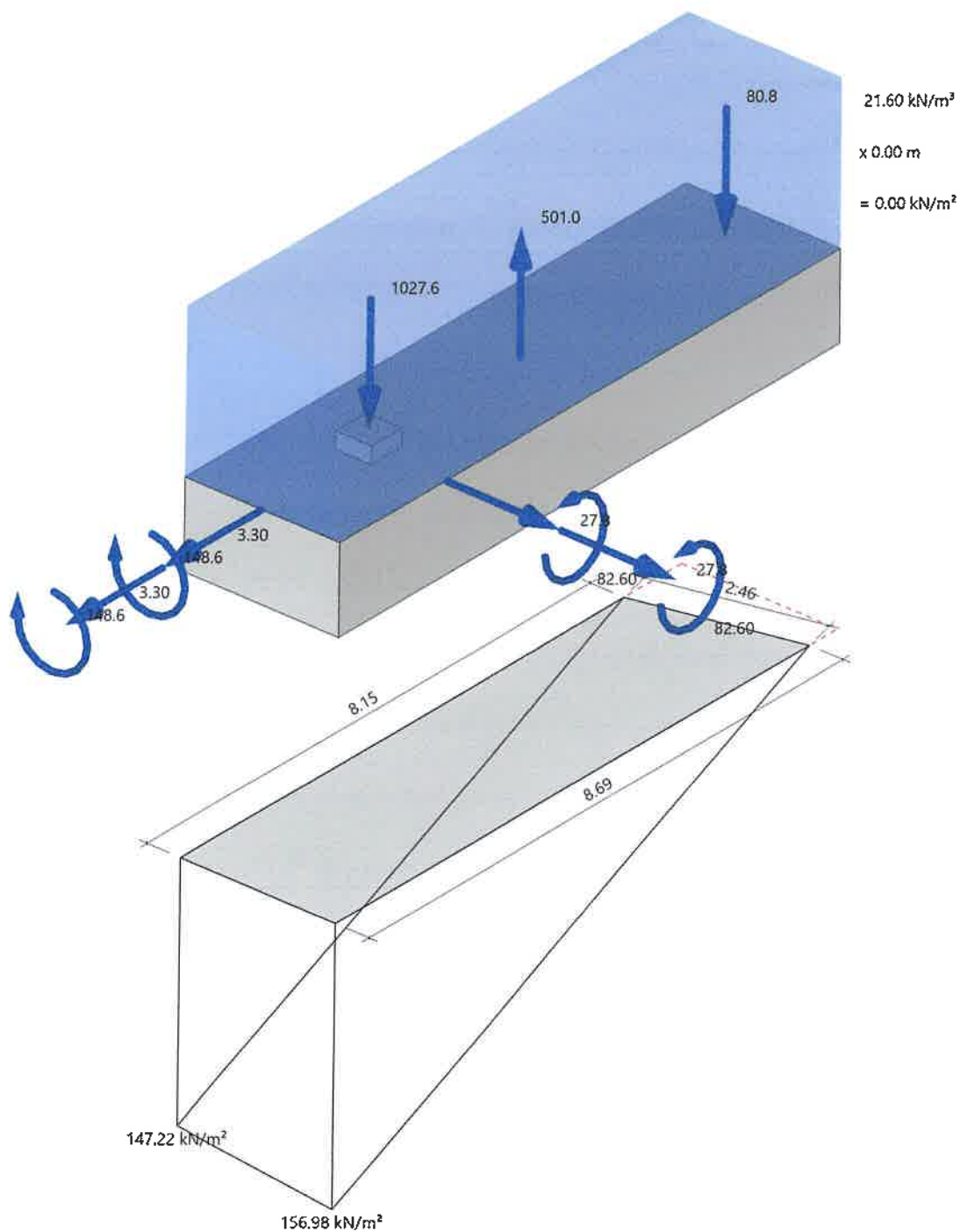
¹ : Gross value. During the design, this load is reduced by the sleeve or column.

Load case graphics

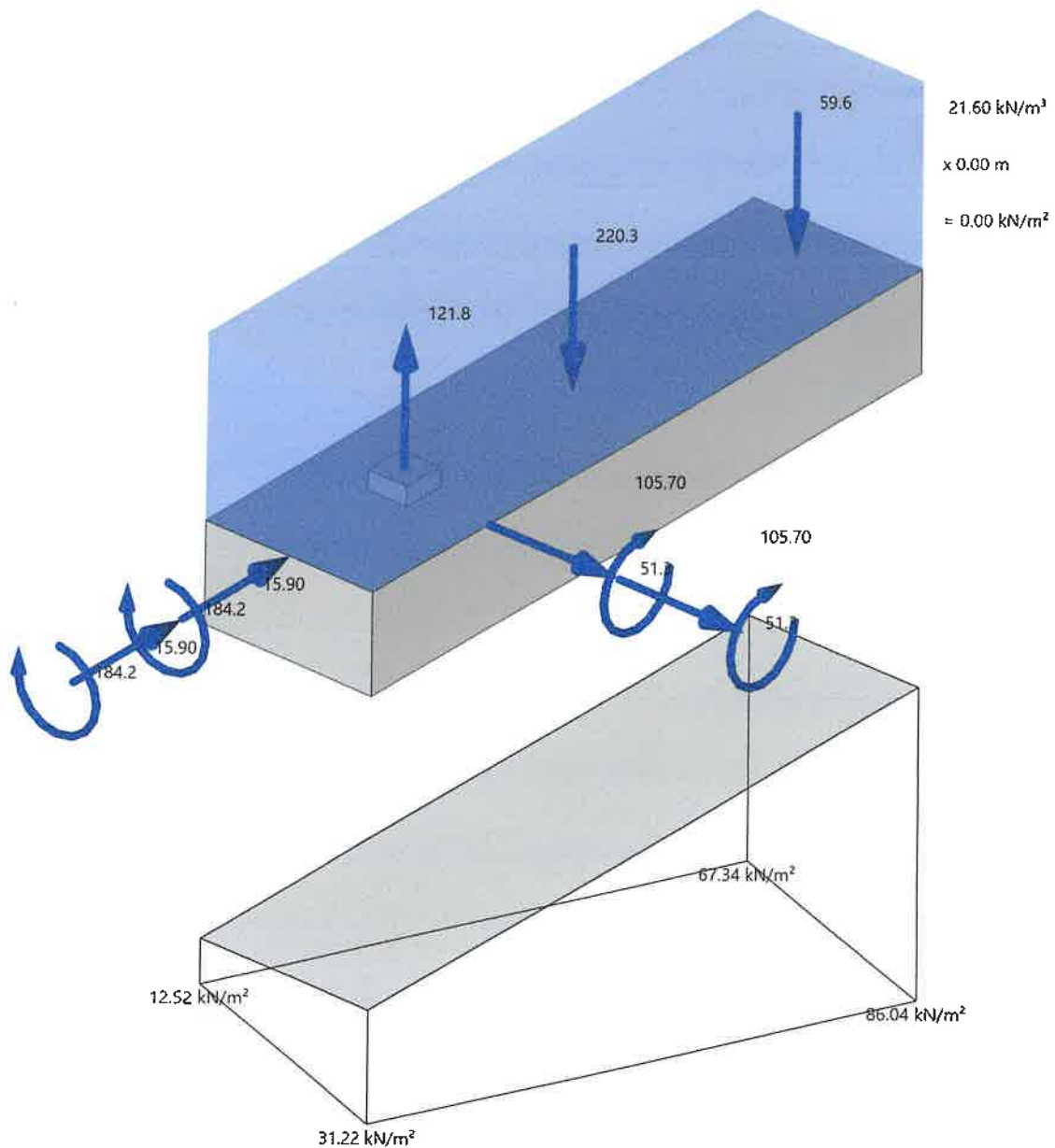
Load case 1 - RC11-maxPz (C033) -



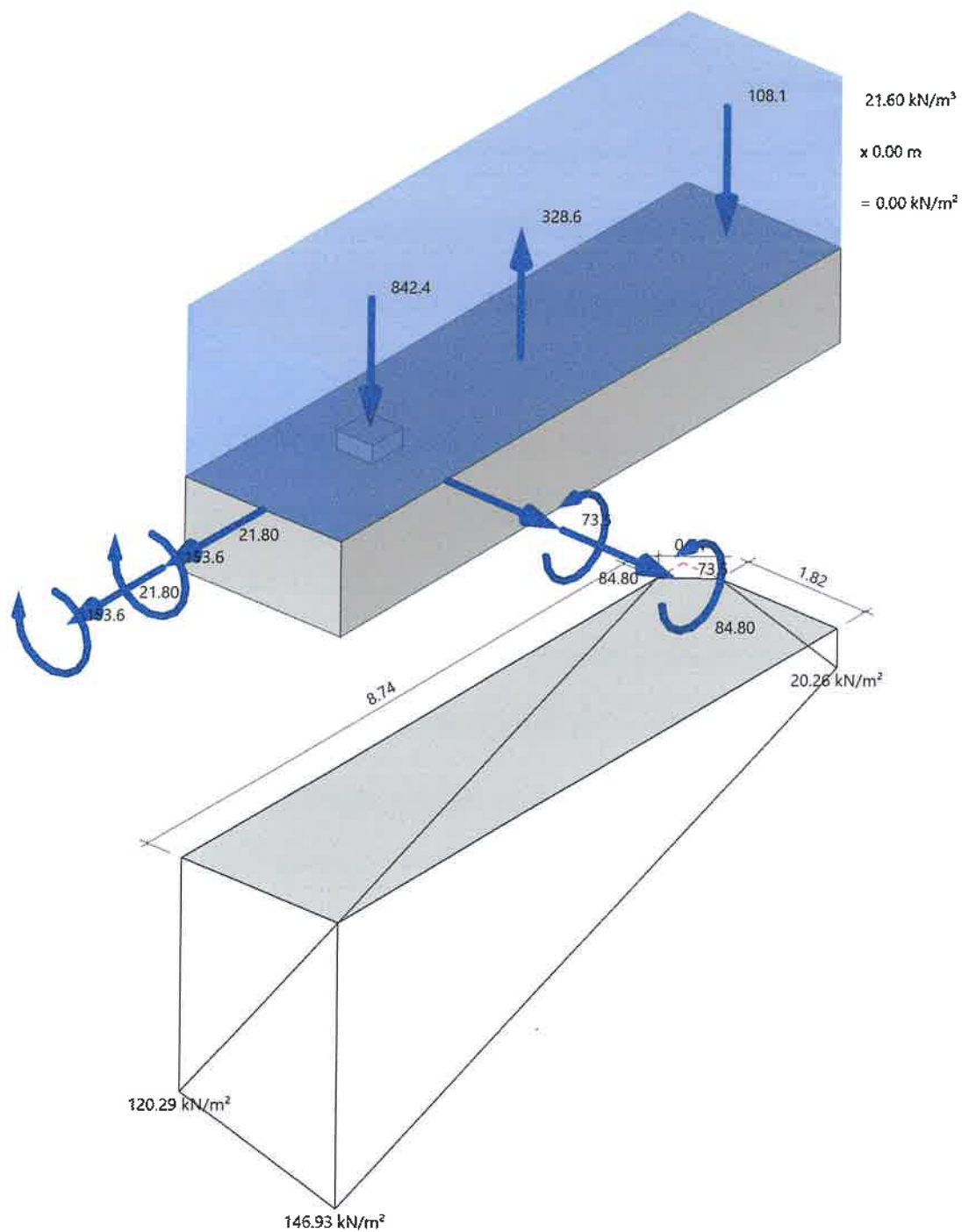
Load case 2 - RC11-minPz-v12(CO41) -



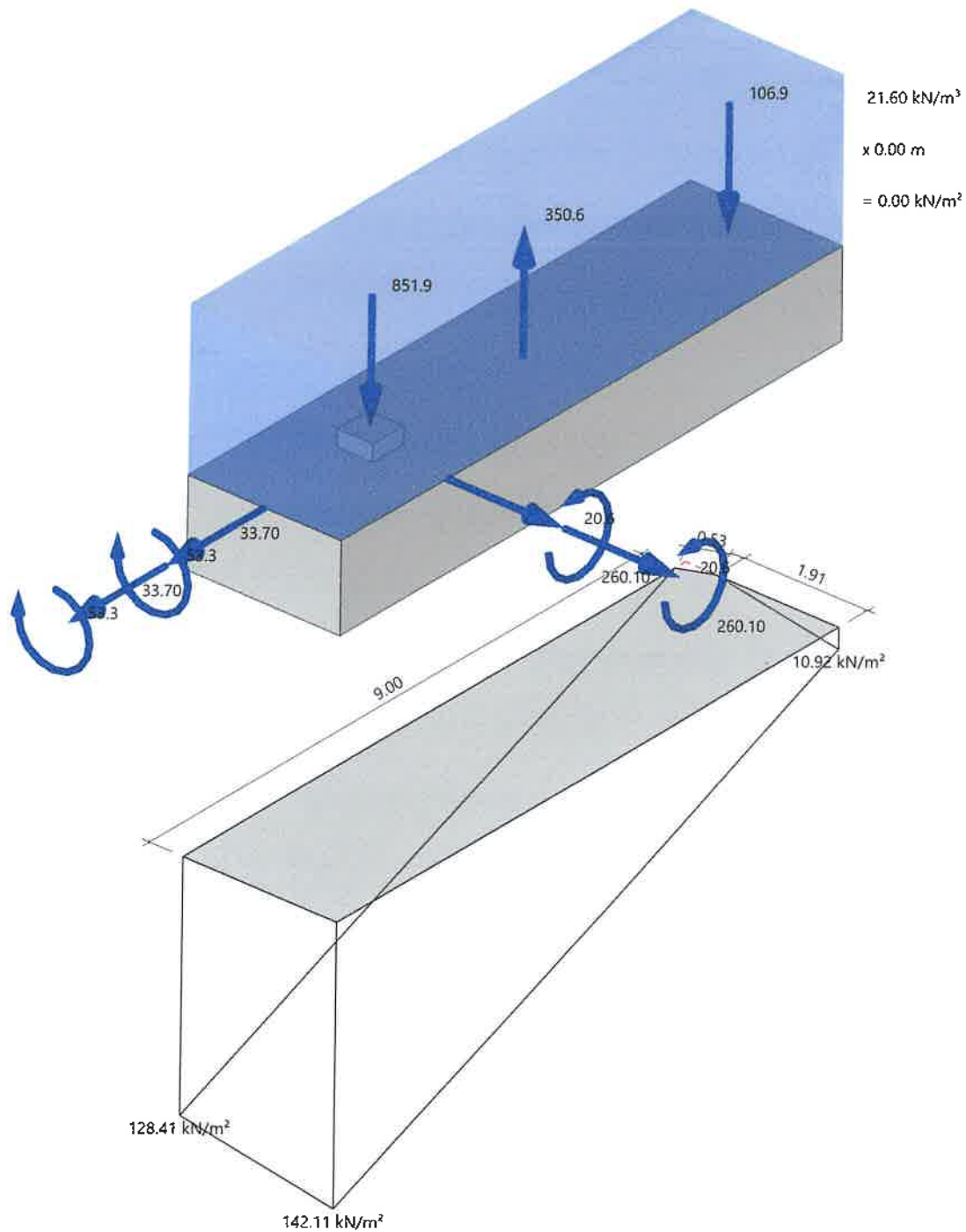
Load case 3 - RC11-minPz (CO116) -



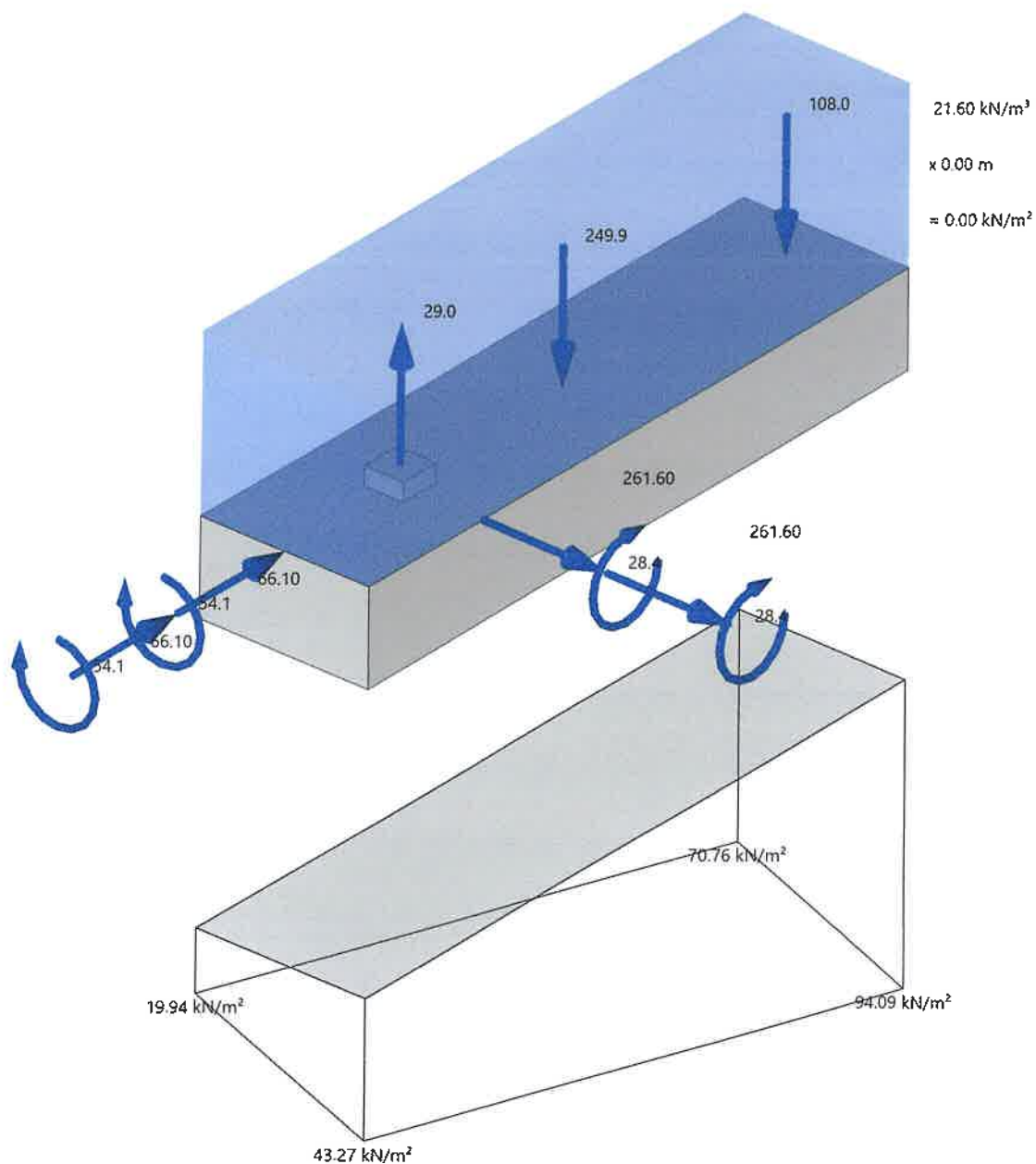
Load case 4 - RC11-maxMy(CO58) -



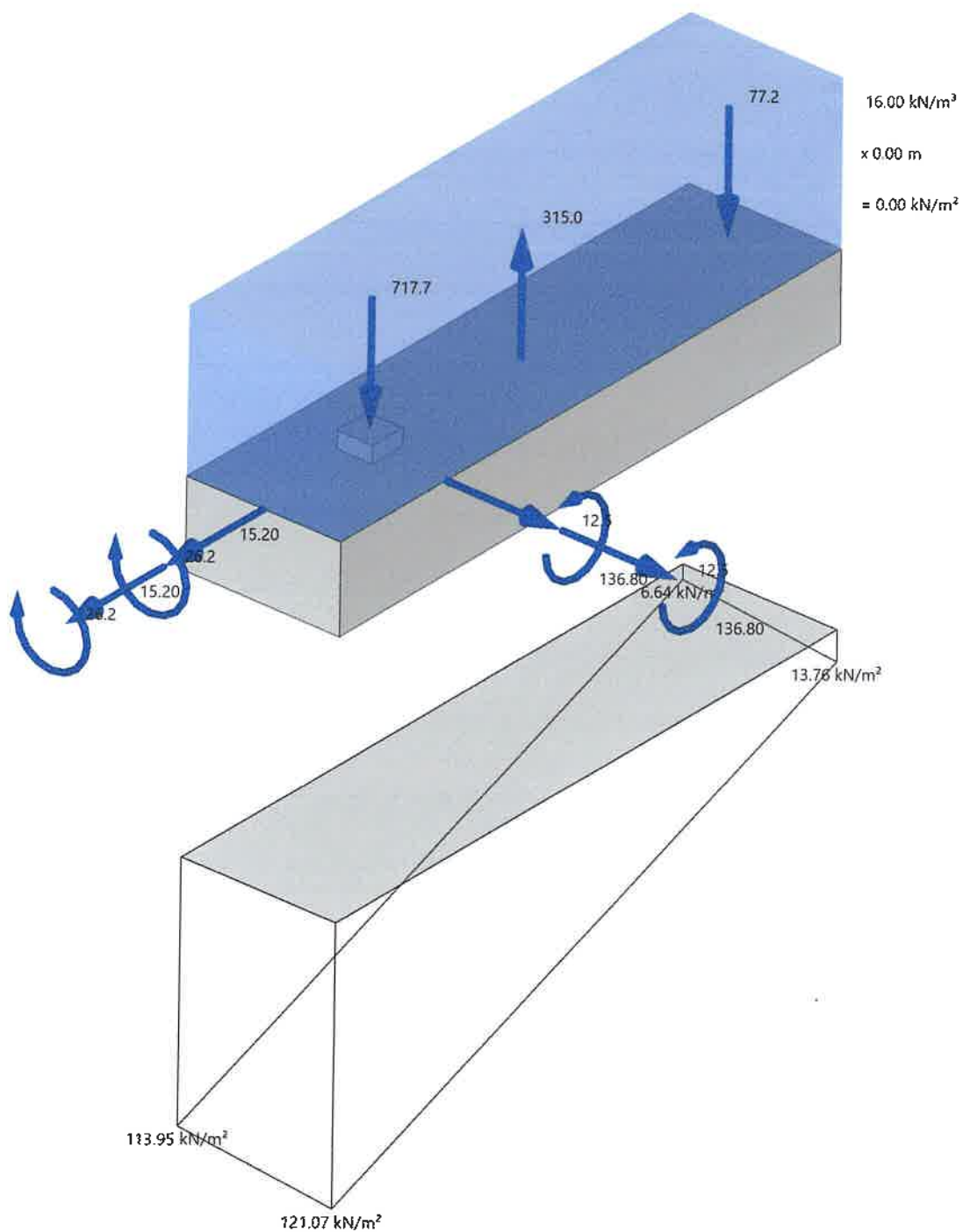
Load case 5 - RC11-maxMx (CO57) -



Load case 6 - RC11-minMx (CO52) -



Load case 8 - RC12-SLS (CO169) -



Check	Load case I	η	Load case II	η
Gaping joint only permanent loads ULS	7 ¹	0.36	7 ¹	0.02
Gaping joint permanent and variable loads ULS	2 ¹	0.54	2 ¹	0.54
Gaping joint only permanent loads SLS characteristic	7 ¹	0.32	7 ¹	0.02
Gaping joint permanent and variable loads SLS characteristic	2 ¹	0.33	2 ¹	0.33
Stability	2 ¹	0.48	2 ¹	0.48

Check	Load case I	η_I	Load case II	η_{II}
Uplift check	2 ¹	0.28	2 ¹	0.28
Simplified method ULS	1 ¹	0.29	1 ¹	0.32
Inclination of base pressure resultant	3 ¹	0.85	3 ¹	0.85

1 : Or corresponding load case with the same designation.

Preview Reinforcement

Type	Load case	cm ²
Bending $A_{s,x,u}$	1 ¹	152.3
Bending $A_{s,y,u}$	2 ¹	39.7
Bending $A_{s,y,o}$	4 ¹	40.1

1 : Or corresponding load case with the same designation.

The inclination of the characteristic or representative base pressure resultant First order effects

$\tan \delta = H/V = 0.17 \leq 0.20$

The inclination of the characteristic or representative base pressure resultant makes the simplified check possible.

Design value of the bearing pressure resistance $\sigma_{R,d} = 400.00 \text{ kN/m}^2$

$\sigma_{R,d} = 430.77 \text{ kN/m}^2$. The design value of bearing pressure resistance has been specified directly. Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$.

Simplified method Resulting Load Case

No.	LS	DS	N_d kN	R_d kN	a' m	b' m	σ_d kN/m ²	$\sigma_{R,d}$ kN/m ²	η
1 _I	GEO	T	1611.4	0.0	2.18	6.01	122.96	430.77	1 ¹ 0.29
1 _{II}	GEO	T	1611.4	0.0	2.14	5.45	138.07	430.77	1 ¹ 0.32

1 : Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$

The bearing pressure is influenced by partial safety factors.

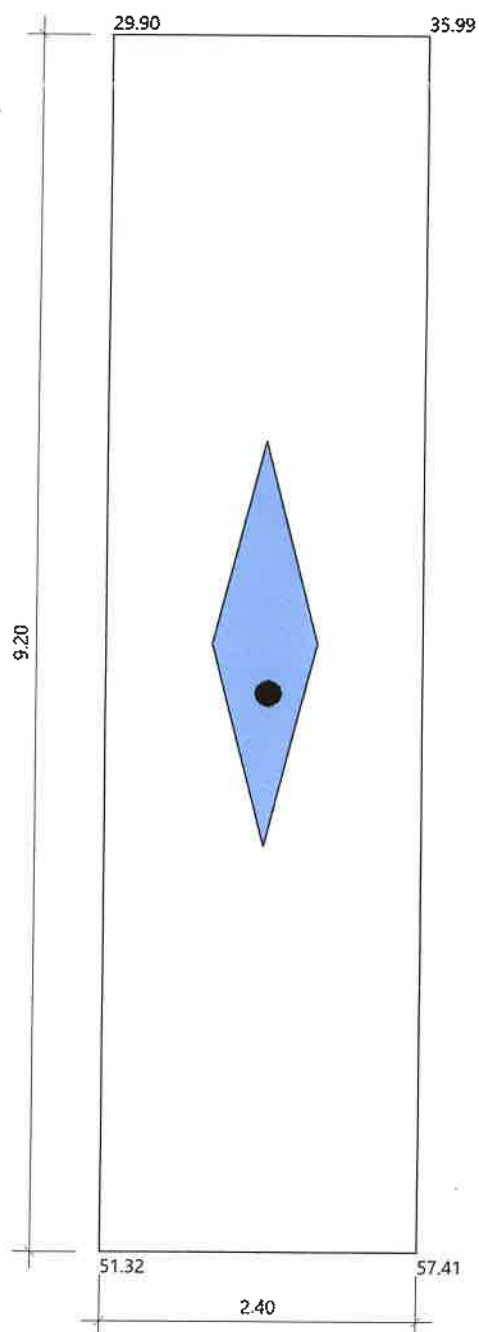
Gaping joint**Gaping joint to EN 1997-1:2004/AC:2009 Resulting Load Case First order effects and second order effects**

No.	LS	DS	N kN	e _x m	e _y m	a [*] /(1/6)	b [*] /(1/9)	η _G	η _{G,Q}	
7 _I	EQU	P	886.6	0.03	-0.44	0.061/0.167	0.002/0.111	0.36	0.54	
7 _{II}	EQU	P	886.6	0.03	-0.44			0.02		
2 _I	EQU	T	1227.4	0.03	-2.24			0.060/0.111		
2 _{II}	EQU	T	1227.4	0.03	-2.24	0.053/0.167	0.060/0.111	0.32	0.54	
7 _I	SLS	P	964.0	0.03	-0.38		0.002/0.111			
7 _{II}	SLS	P	964.0	0.03	-0.38		0.02			
2 _I	SLS	T	1122.7	0.03	-1.75		0.036/0.111	0.33	0.33	
2 _{II}	SLS	T	1122.7	0.03	-1.75		0.036/0.111			

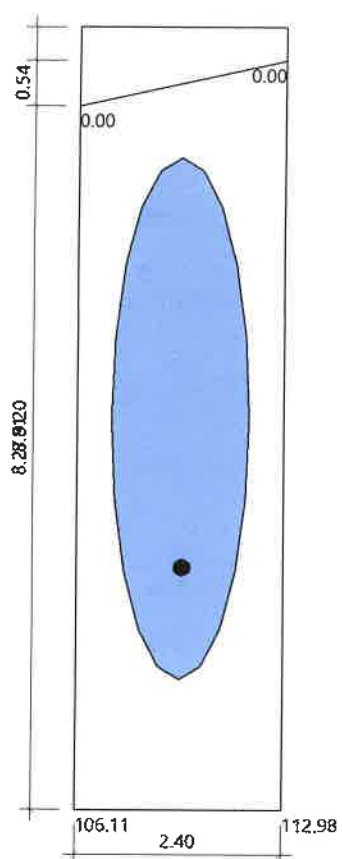
$a^* = e_x/b_x + e_y/b_y$ $b^* = (e_x/b_x)^2 + (e_y/b_y)^2$ $\eta_G = a^*/(1/6)$ $\eta_{G,Q} = b^*/(1/9)$

If no relevant characteristic load cases have been defined, the verification of the gaping joint has been reduced to a characteristic level using reduction factors.

Graphic only permanent loads



Graphic permanent and variable loads



Bending

Design Result Load Cases

LC	$M_{yu,Ed}$ kNm	$M_{xu,Ed}$ kNm	$M_{yo,Ed}$ kNm	$M_{xo,Ed}$ kNm	$A_{s,xu}$ cm ²	$A_{s,yu}$ cm ²	$A_{s,xo}$ cm ²	$A_{s,yo}$ cm ²
1 ¹	220.60	363.60	0.00	-882.89	152.3*	39.7*	0.0	40.1*
2	129.33	371.76	0.00	-950.53	152.3*	39.7*	0.0	40.1*
4	97.15	275.07	0.00	-1117.34	152.3*	39.7*	0.0	40.1*

*: Minimal reinforcement by EN 1992-1-1:2004/A1:2014 9.2.1.1 (1)

1 : Or corresponding load case with the same designation.

Reinforcement layer Reinforcement in x-direction $d1, x = 5.9$ cm. Reinforcement layer Reinforcement in y-direction $d1, y = 5.9$ cm. Reinforcement layer Reinforcement in x-direction $d2, x = 4.8$ cm. Reinforcement layer Reinforcement in y-direction $d2, y = 4.8$ cm. Rounded bending moment from the axis of the column. 20% transverse reinforcement was taken into account.

Reinforcement in x-direction bottom (m,cm²)

from	-460.0	-230.0	230.0
to	-230.0	230.0	460.0
Width	230.0	460.0	230.0
	15Ø20/15.0	30Ø20/15.0	15Ø20/15.0
req. As	38.1	76.2	38.1
exist.As	47.1	94.3	47.1
req.as/m	16.6	16.6	16.6
exist.as/m	20.5	20.5	20.5
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in y-direction bottom (m,cm²)

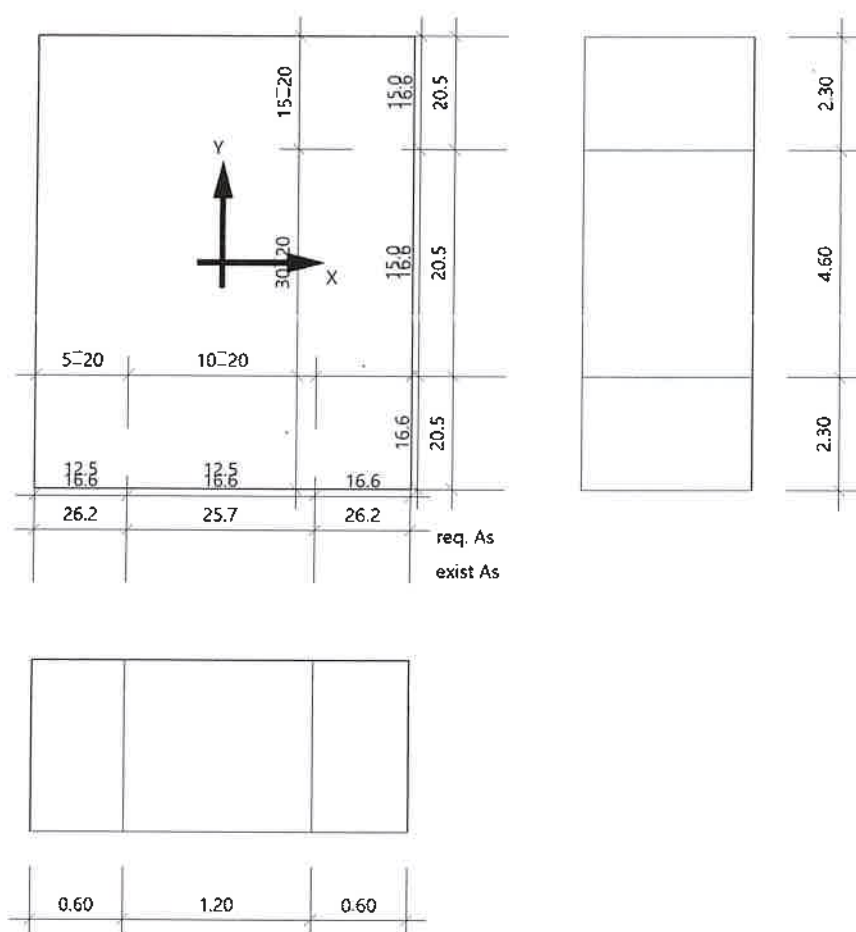
from	-120.0	-60.0	60.0
to	-60.0	60.0	120.0
Width	60.0	120.0	60.0
	5Ø20/12.5	10Ø20/12.5	5Ø20/12.5
req. As	9.9	19.9	9.9
exist.As	15.7	30.8	15.7
req.as/m	16.6	16.6	16.6
exist.as/m	26.2	25.7	26.2
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in x-direction top (m,cm²)

from	-460.0
to	460.0
Width	920.0
	60Ø16/15.0
req. As	0.0
exist.As	120.6
req.as/m	0.0
exist.as/m	13.1
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

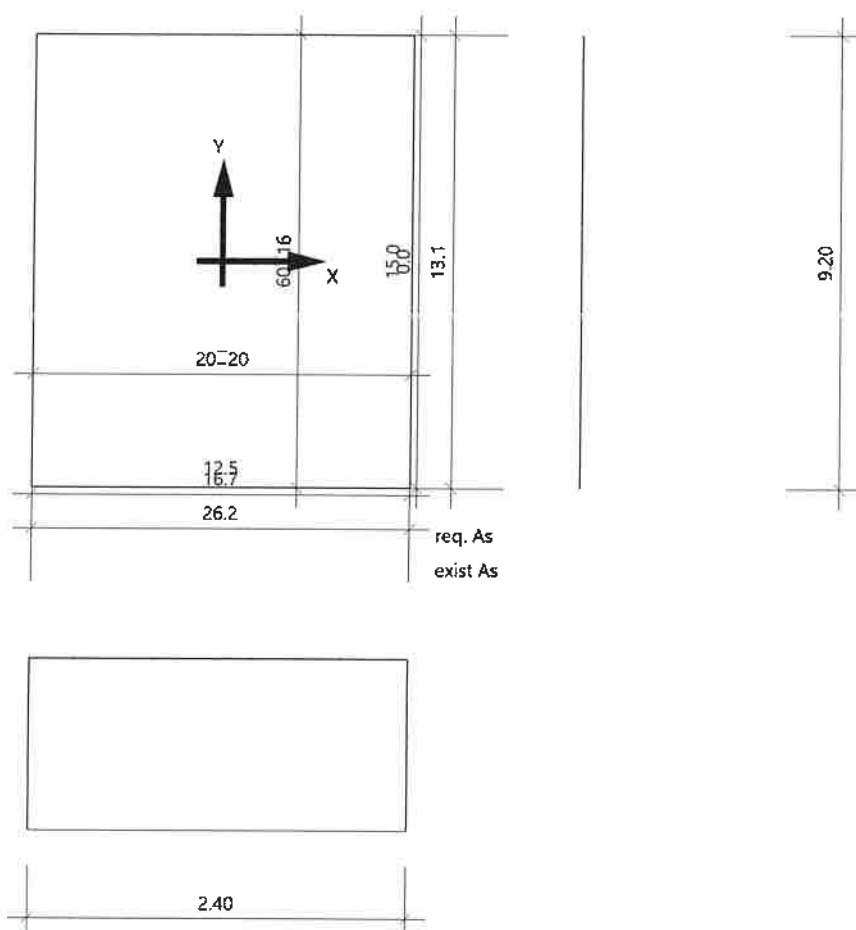
Reinforcement in y-direction top (m,cm²)

from	-120.0
to	120.0
Width	240.0
	20Ø20/12.5
req. As	40.1
exist.As	62.8
req.as/m	16.7
exist.as/m	26.2
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm	

Reinforcement Distribution bottom in m, cm²/m

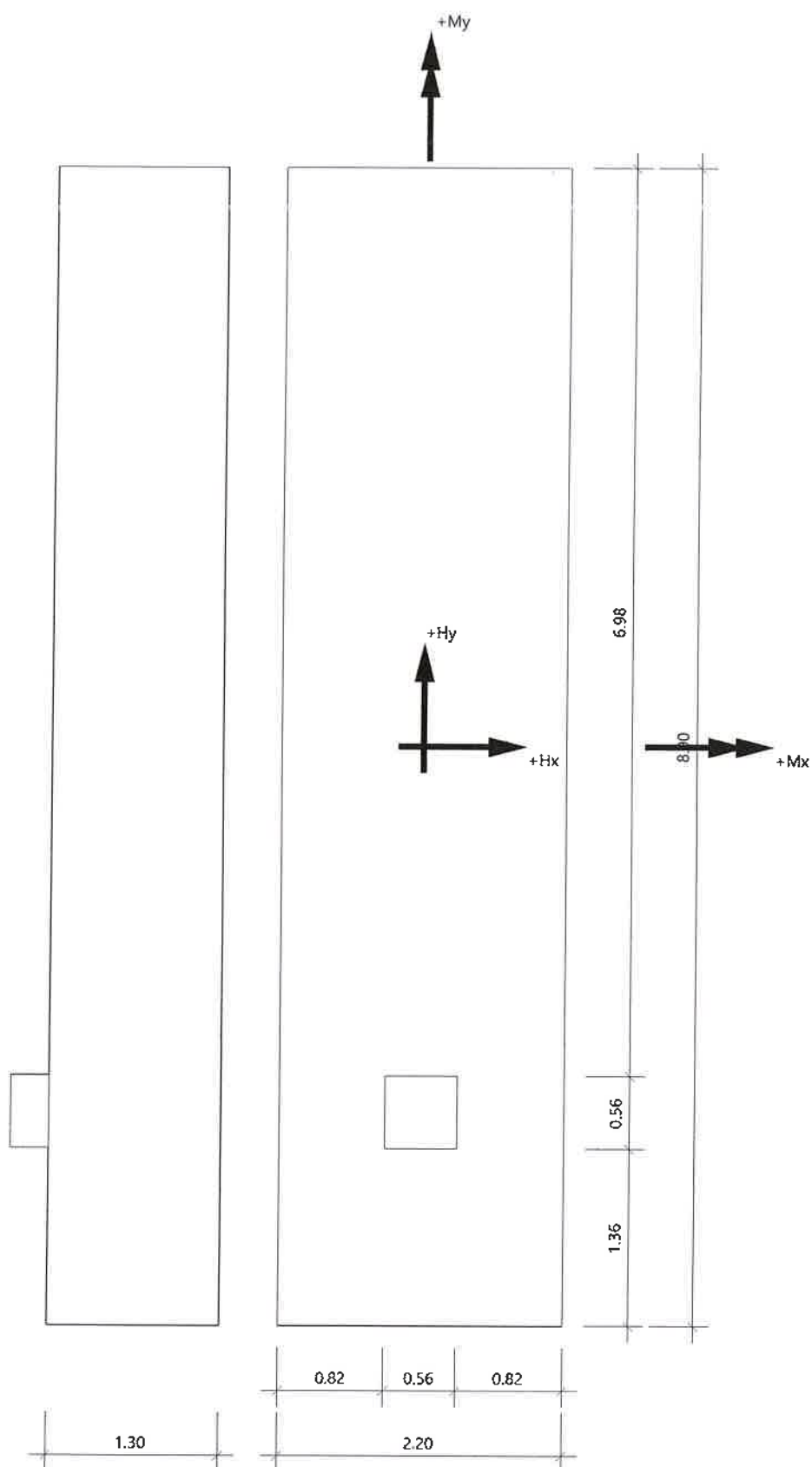
In order to ensure the transverse carrying capacity, the foundation has been dimensioned in the punching range for minimum moments according to equation (NA.6.54.1), provided the shear force determination has not led to higher values.

Reinforcement Distribution top in m, cm²/m

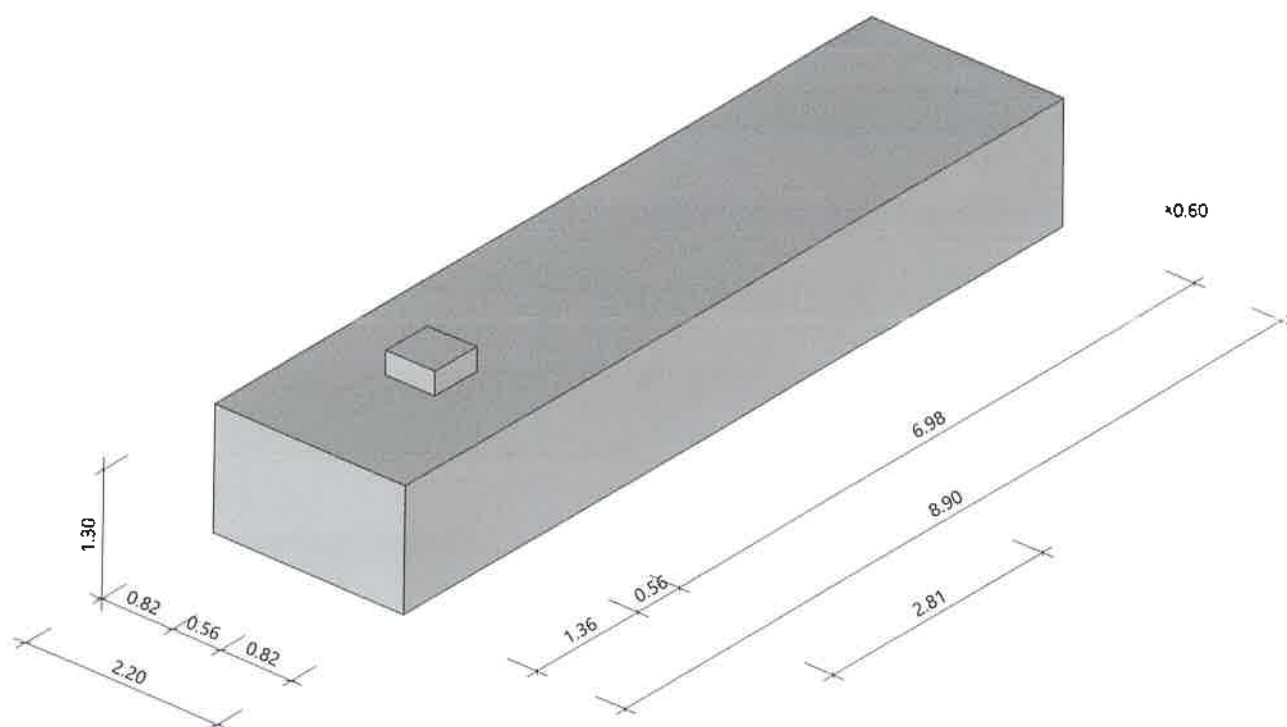


Position: T-5-R2 Temelj treh stebrov (v.14, 15 in 16)

Isolated Foundation (x64) FD+ 02/2025B (FRILO R-2025-2/P03)

System**Plan view**

Isometric



Foundation acc. to EN 1992-1-1:2004/A1:2014 and EN 1997-1:2004/AC:2009

Member

Member	Concrete	Steel	Width (x) m	Width (y) m	Height (z) m
Foundation	C 25/30	B 500(B)	2.20	8.90	1.30
Column	C 25/30	B 500(B)	0.56	0.56	0.00

Eccentricity $e_y = -2.81\text{ m}$. Embedment depth of the foundation in the subsoil 0.60 m . Without groundwater Design value of the bearing pressure resistance $\sigma_{R,d} = 430.77\text{ kN/m}^2$.

Characteristic values

Durability

Requirements durability:

attack on concrete	X0
reinforc. corrosion	XC2
min. concrete class	C 25/30
Stirrup	$d_{s,b} = 16\text{ mm}$
long. reinforcement	$d_{s,l} = 16\text{ mm}$
allowance in design	$\Delta C_{dev} = 10\text{ mm}$
Stirrup	$c_{min,l} = 25\text{ mm}$
concrete coverage	$c_{nom,l} = 35\text{ mm}$
longitudinal bars	$c_{min,m} = 25\text{ mm}$
concrete coverage	$c_{nom,m} = 51\text{ mm}$ *1
laying dist. link	$c_l = 35\text{ mm}$
all. crack width	$w_{max} = 0.30\text{ mm}$

*1:with $c_{min,l}$

Loads**Column loads - Design values**

No.	Description	N kN	M _{xi} kNm	M _{xii} kNm	M _{yi} kNm	M _{yii} kNm	H _{xi} kN	H _{xii} kN	H _{yi} kN	H _{yii} kN	Red N ¹	Red M ¹	DS ²	LS
1	RC11-maxPz (CO33)	1079.4	171.70	171.70	-18.40	-18.40	4.9	4.9	-30.0	-30.0	1.40	1.40	DST	STR
2		952.1	140.40	140.40	-11.90	-11.90	-2.4	-2.4	-22.9	-22.9	1.40	1.40	DST	STR
3	RC11-minPz-v18(CO109) RC11-minPz-v22 (CO115)	-202.7	-251.10	-251.10	30.00	30.00	9.0	9.0	53.7	53.7	1.40	1.40	DST	STR
4	RC11-maxMy(CO58)	912.9	-12.50	-12.50	-24.80	-24.80	-6.1	-6.1	7.6	7.6	1.40	1.40	DST	STR
5	RC11-minMx-v16 (CO57)	899.6	242.00	242.00	-11.50	-11.50	-3.2	-3.2	-47.5	-47.5	1.40	1.40	DST	STR
6	RC11-maxMx-v22 (CO51)	-83.6	-263.30	-263.30	-4.00	-4.00	-0.9	-0.9	54.4	54.4	1.40	1.40	DST	STR
7	3 Stalna-G	262.3	-3.60	-3.60	4.00	4.00	1.5	1.5	1.0	1.0	1.00	1.00	DSP	SLS
8	RC12-SLS (CO169)	746.4	115.90	115.90	-18.10	-18.10	-5.0	-5.0	-21.0	-21.0	1.00	1.00	DSP	SLS
9	RC10-Potres	329.2	201.10	201.10	11.90	11.90	3.4	3.4	-46.6	-46.6	1.00	1.00	DSE	EQU

1 : Reduction factors N for vertical loads and MH for moments and horizontal loads, used for generating missing limit states.
2 : DS: design situation P: Permanent A: accidental E: Earthquake T: transient
3 : only permanent loads

If a load case is not available in the required limit state for a verification, a load case with the same designation and required limit state is used. If there is no corresponding load case, a load case is generated using the reduction factors. Self-weight is taken into account in the calculation. Density Concrete : $\gamma = 24.00 \text{ kN/m}^3$. Total Foundation without socket resp. column $25.454 \text{ m}^3 / 610.90 \text{ kN}$. Horizontal loads act on the upper edge of the base or the column. Torsion from horizontal loads is not considered.

charakteristische Schnittgrößen in der Sohlfluge

LC No.	Description	V kN	ex m	My kNm	ey m	Mx kNm	Hx kN	Hy kN
1	Th.1.O.	1397.5	-0.01	-8.59	-1.15	-1607.38	3.5	-21.4
1	Th.2.O.	1397.5	-0.01	-8.59	-1.15	-1607.38	3.5	-21.4
2	Th.1.O.	1137.5	-0.01	-10.73	-1.46	-1662.10	-1.7	-16.4
2	Th.2.O.	1137.5	-0.01	-10.73	-1.46	-1662.10	-1.7	-16.4
3	Th.1.O.	812.3	0.04	29.79	1.19	966.16	6.4	38.4
3	Th.2.O.	812.3	0.04	29.79	1.19	966.16	6.4	38.4
4	Th.1.O.	1347.5	-0.02	-23.38	-0.84	-1136.85	-4.4	5.4
4	Th.2.O.	1347.5	-0.02	-23.38	-0.84	-1136.85	-4.4	5.4
5	Th.1.O.	1345.7	-0.01	-11.19	-0.97	-1305.54	-2.3	-33.9
5	Th.2.O.	1345.7	-0.01	-11.19	-0.97	-1305.54	-2.3	-33.9
6	Th.1.O.	1244.0	-0.003	-3.69	1.02	1264.83	-0.6	38.9
6	Th.2.O.	1244.0	-0.003	-3.69	1.02	1264.83	-0.6	38.9
7	Th.1.O.	1102.2	0.01	5.95	-0.16	-171.28	1.5	1.0
7	Th.2.O.	1102.2	0.01	5.95	-0.16	-171.28	1.5	1.0
8	Th.1.O.	1394.5	-0.02	-24.60	-1.09	-1521.99	-5.0	-21.0
8	Th.2.O.	1394.5	-0.02	-24.60	-1.09	-1521.99	-5.0	-21.0
9	Th.1.O.	1198.7	0.01	16.32	-0.42	-498.97	3.4	-46.6
9	Th.2.O.	1198.7	0.01	16.32	-0.42	-498.97	3.4	-46.6

Single loads

No.	Considered in load case	N kN	Action	ax m	ay m
1	1	-241.1	design value	0.00	-0.03
2	1	263.0	design value	0.00	3.75
3	2	-350.3	design value	0.00	-0.03
4	2	135.5	design value	0.00	3.75
5	3	358.5	design value	0.00	-0.03
6	3	126.1	design value	0.00	3.75
7	4	-134.2	design value	0.00	-0.03
8	4	252.6	design value	0.00	3.75
9	5	-137.5	design value	0.00	-0.03
10	5	266.6	design value	0.00	3.75
11	6	460.2	ständig	0.00	-0.03
12	6	232.6	ständig	0.00	3.75
13	7	78.8	ständig	0.00	-0.03
14	7	150.2	ständig	0.00	3.75

No.	Considered in load case	N kN	Action	ax m	ay m
15	8	-153.2	design value	0.00	-0.03
16	8	190.4	design value	0.00	3.75
17	9	74.6	ständig	0.00	-0.03
18	9	184.0	ständig	0.00	3.75

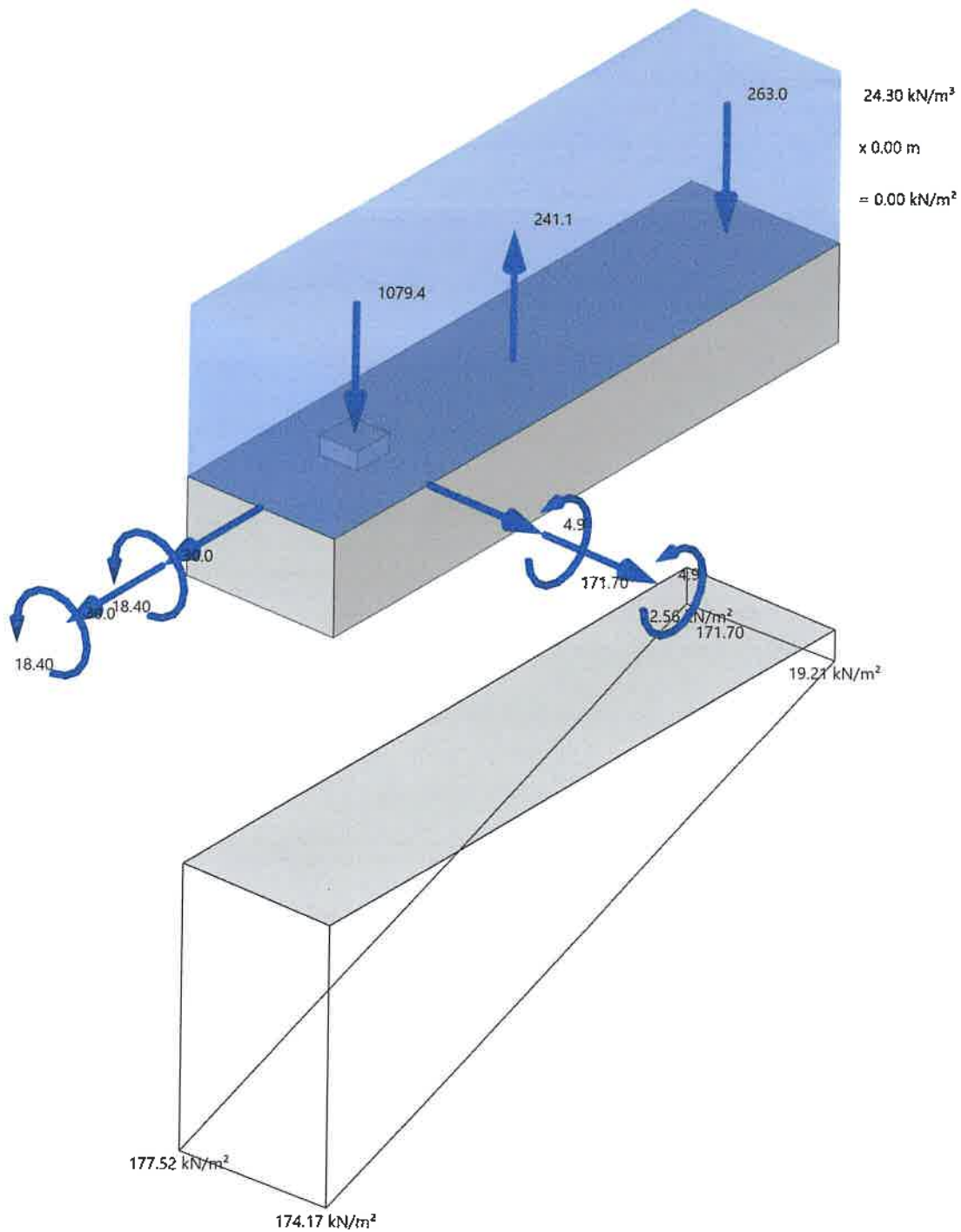
Area Loads

No.	Considered in load case	Action	h _E m	γ _E kN/m ³	q kN/m ²	R kN
1	1, 4, 5	design value	0.00	24.30	0.00	0.0 ¹
2	2, 3, 6, 7, 8	design value	0.00	18.00	0.00	0.0 ¹

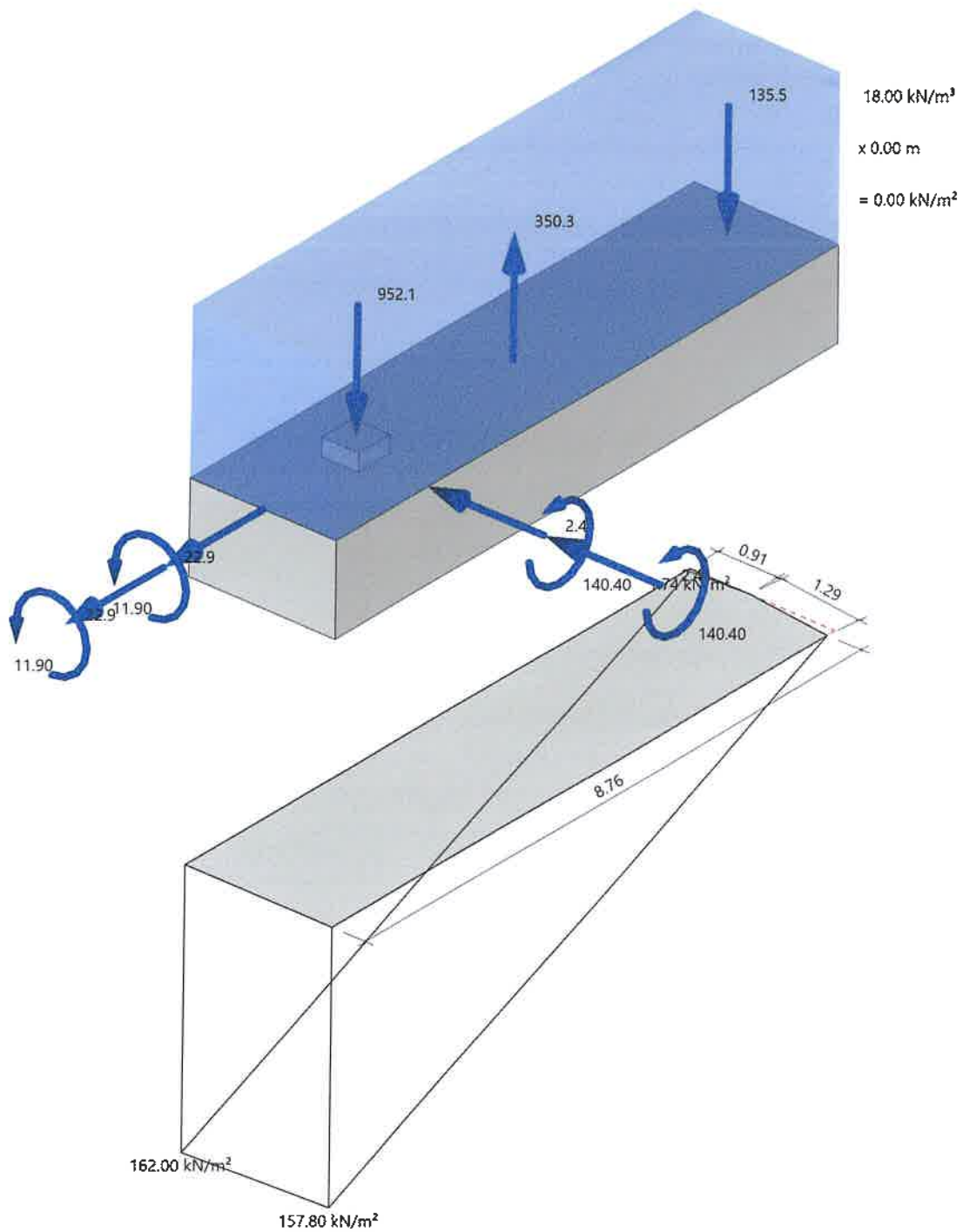
1 : Gross value. During the design, this load is reduced by the sleeve or column.

Load case graphics

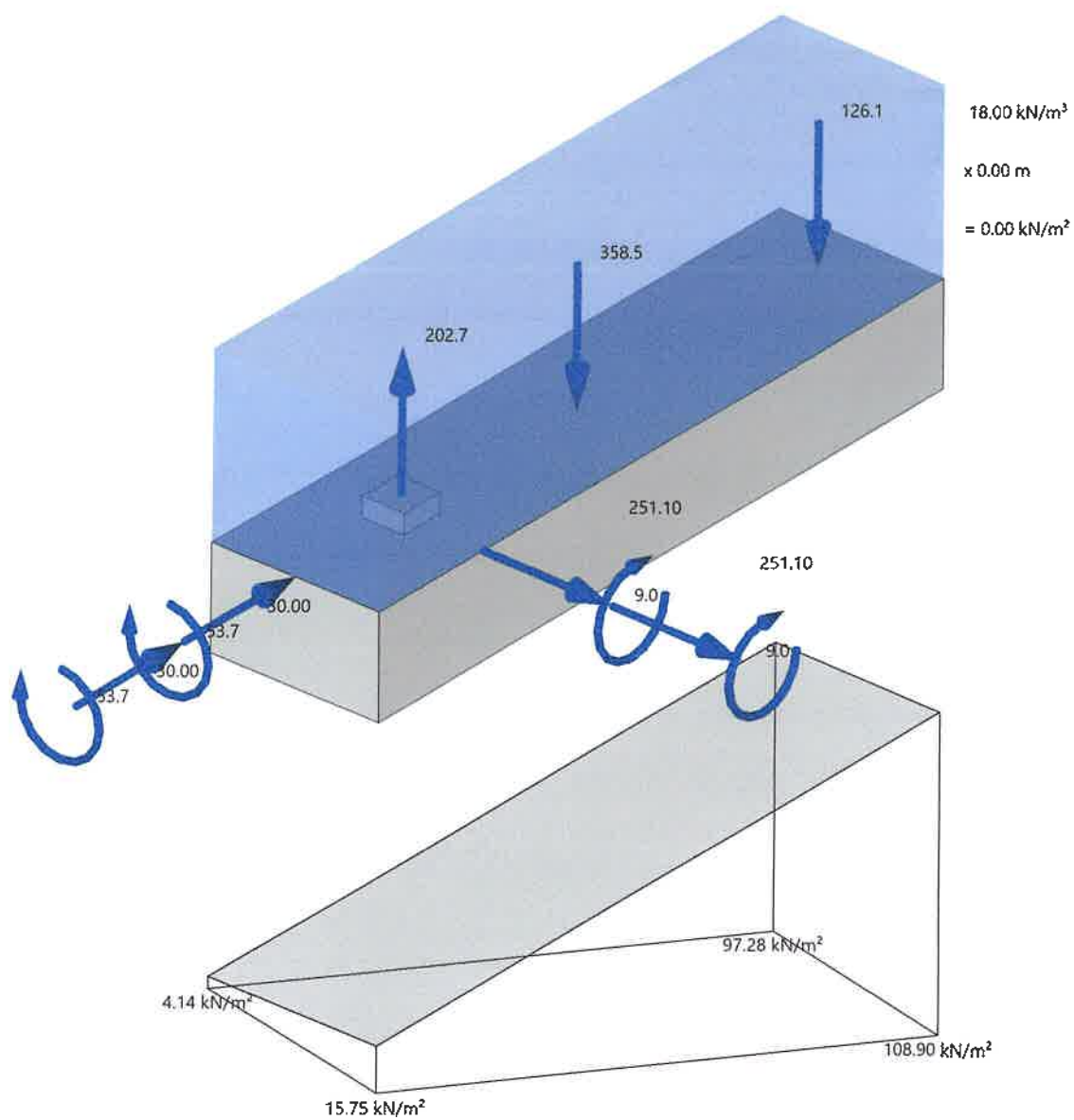
Load case 1 - RC11-maxPz (CO33) -



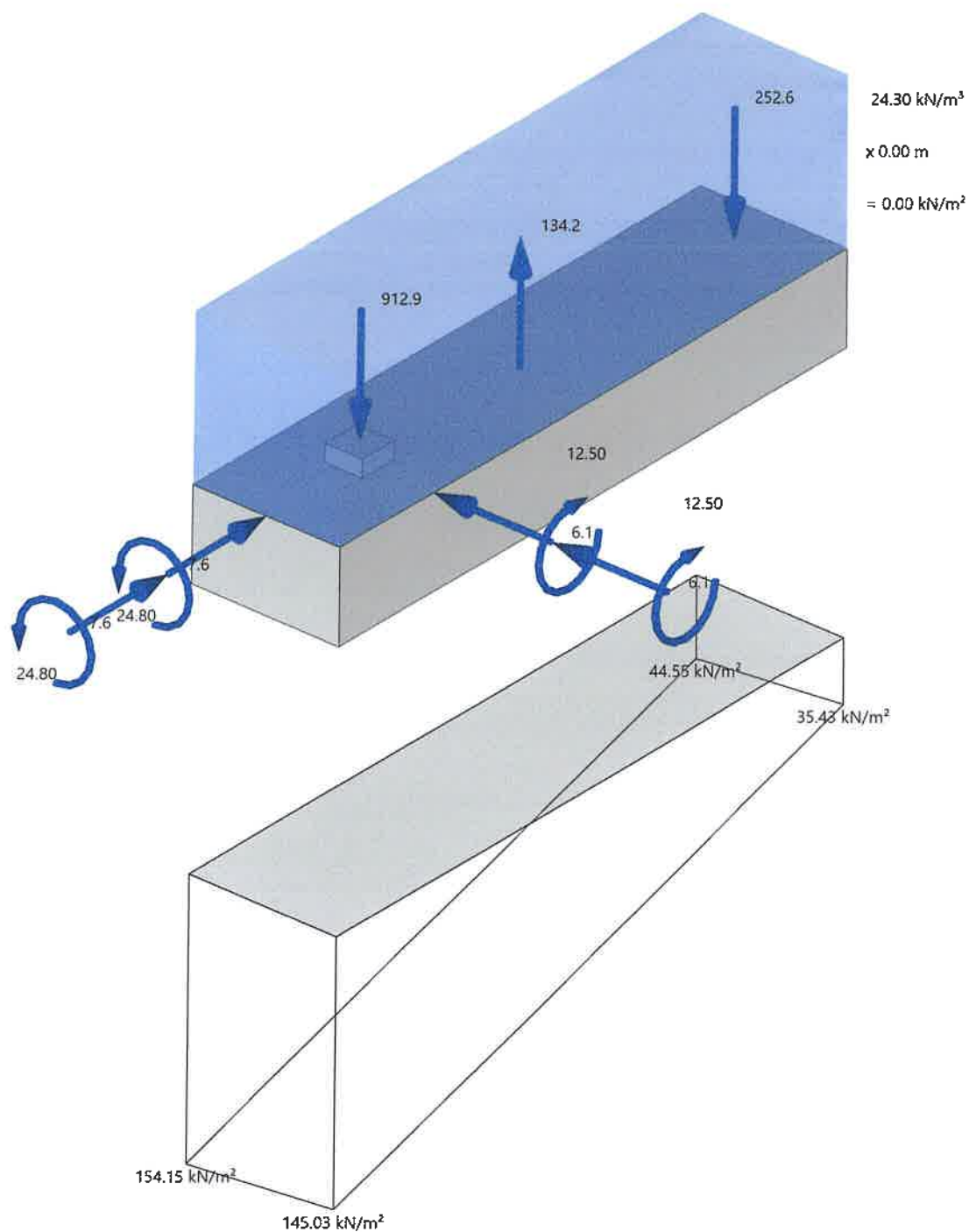
Load case 2 - RC11-minPz-v18(CO109) -



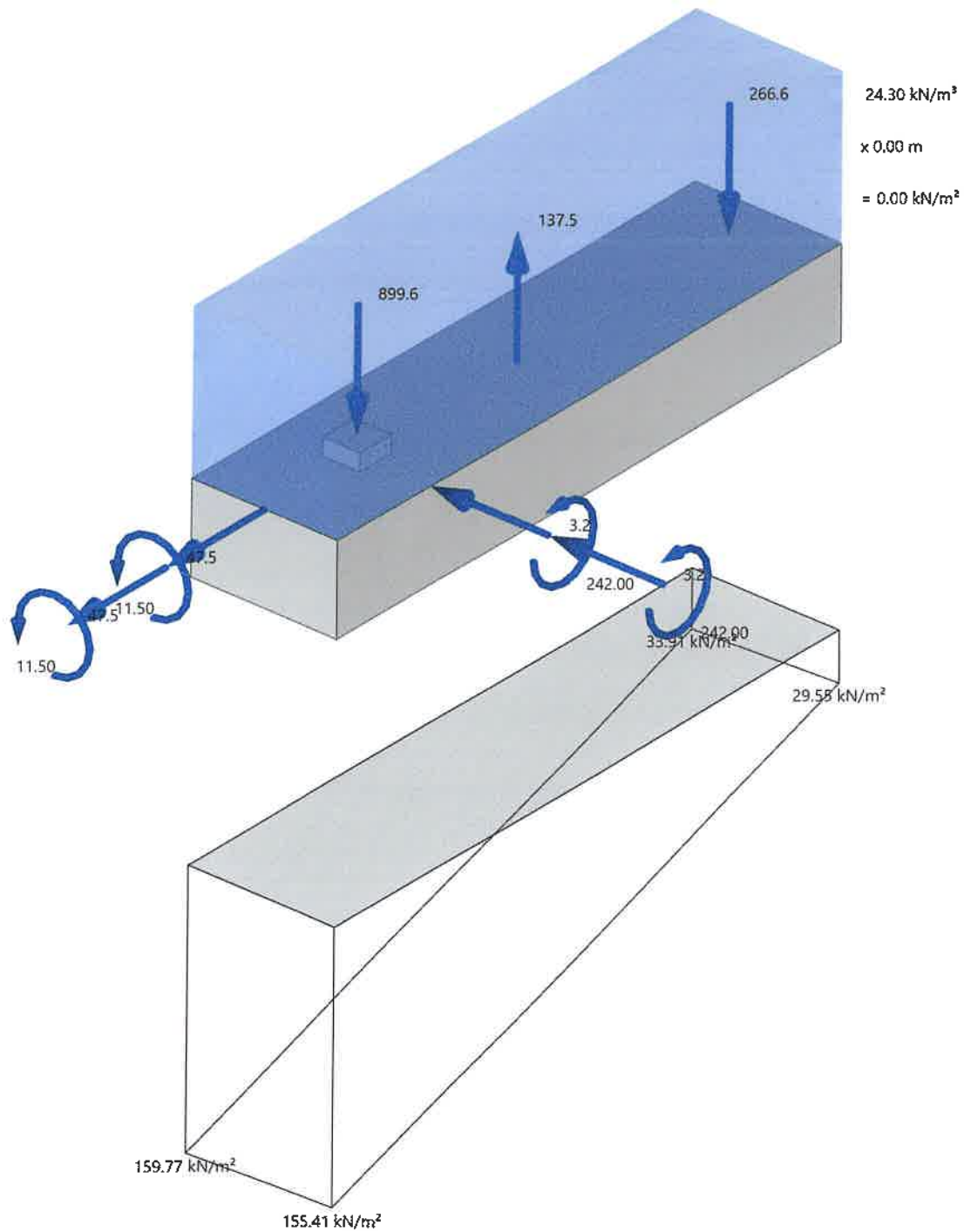
Load case 3 - RC11-minPz-v22 (CO115) -



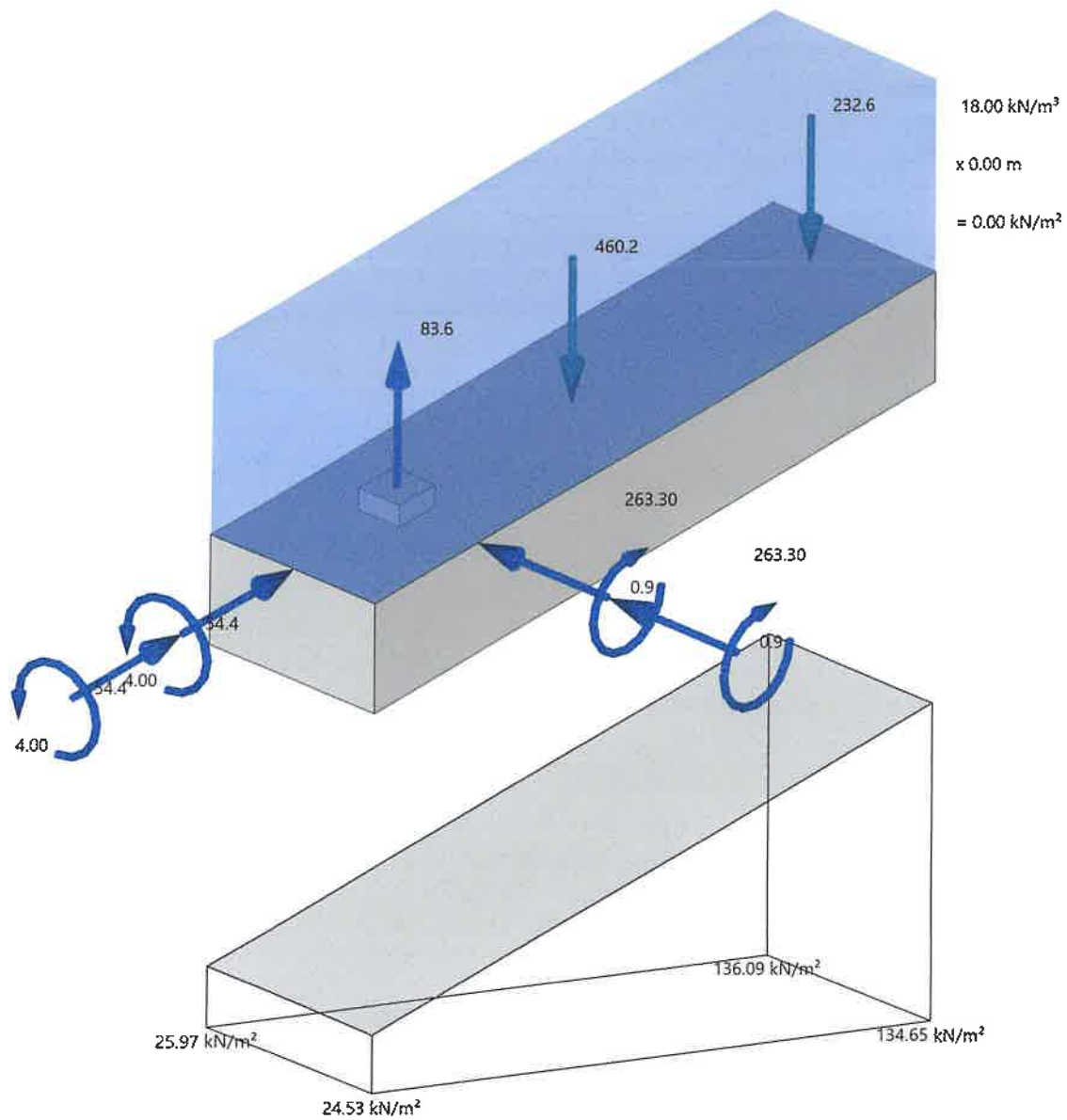
Load case 4 - RC11-maxMy(CO58) -



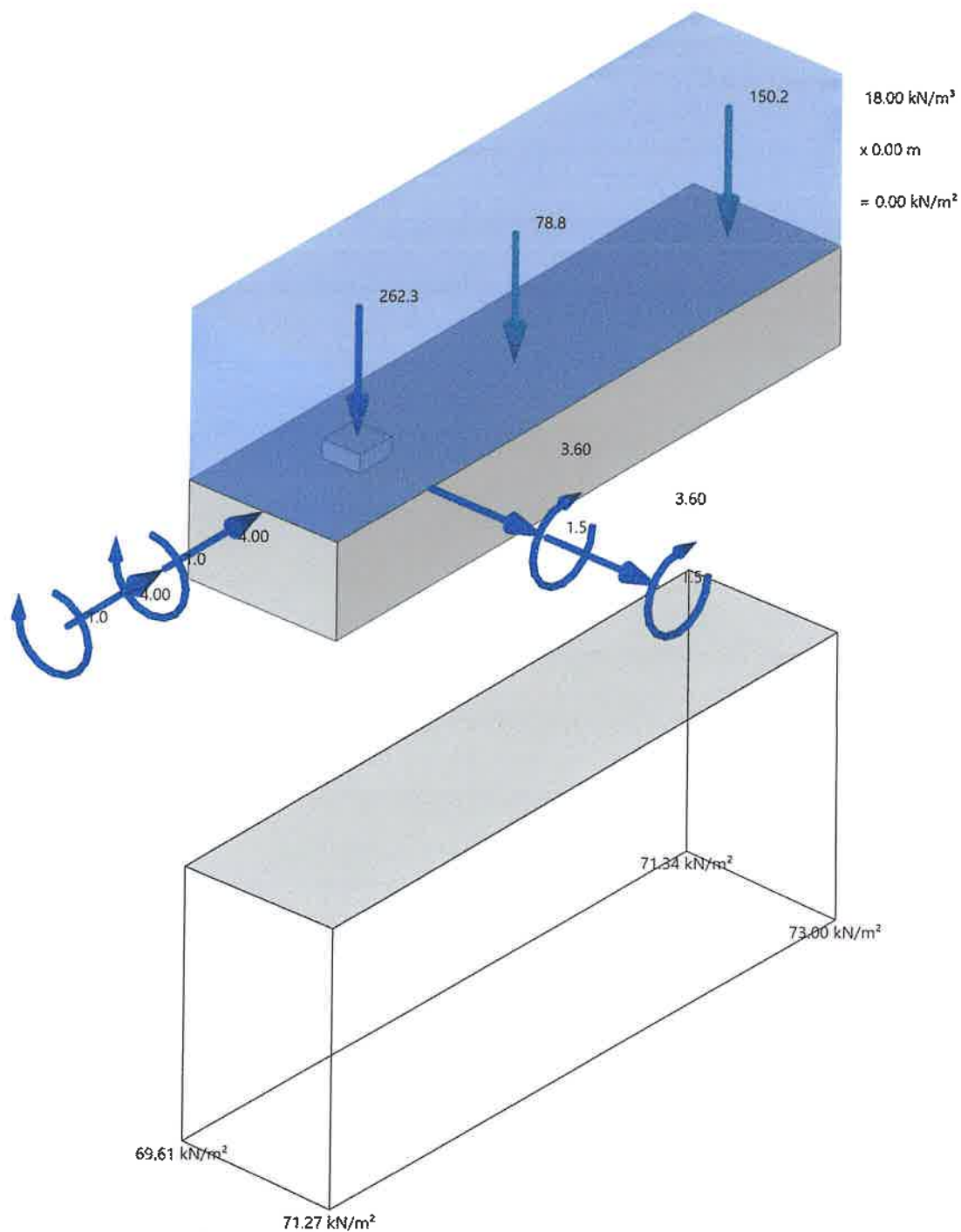
Load case 5 - RC11-minMx-v16 (C057) -



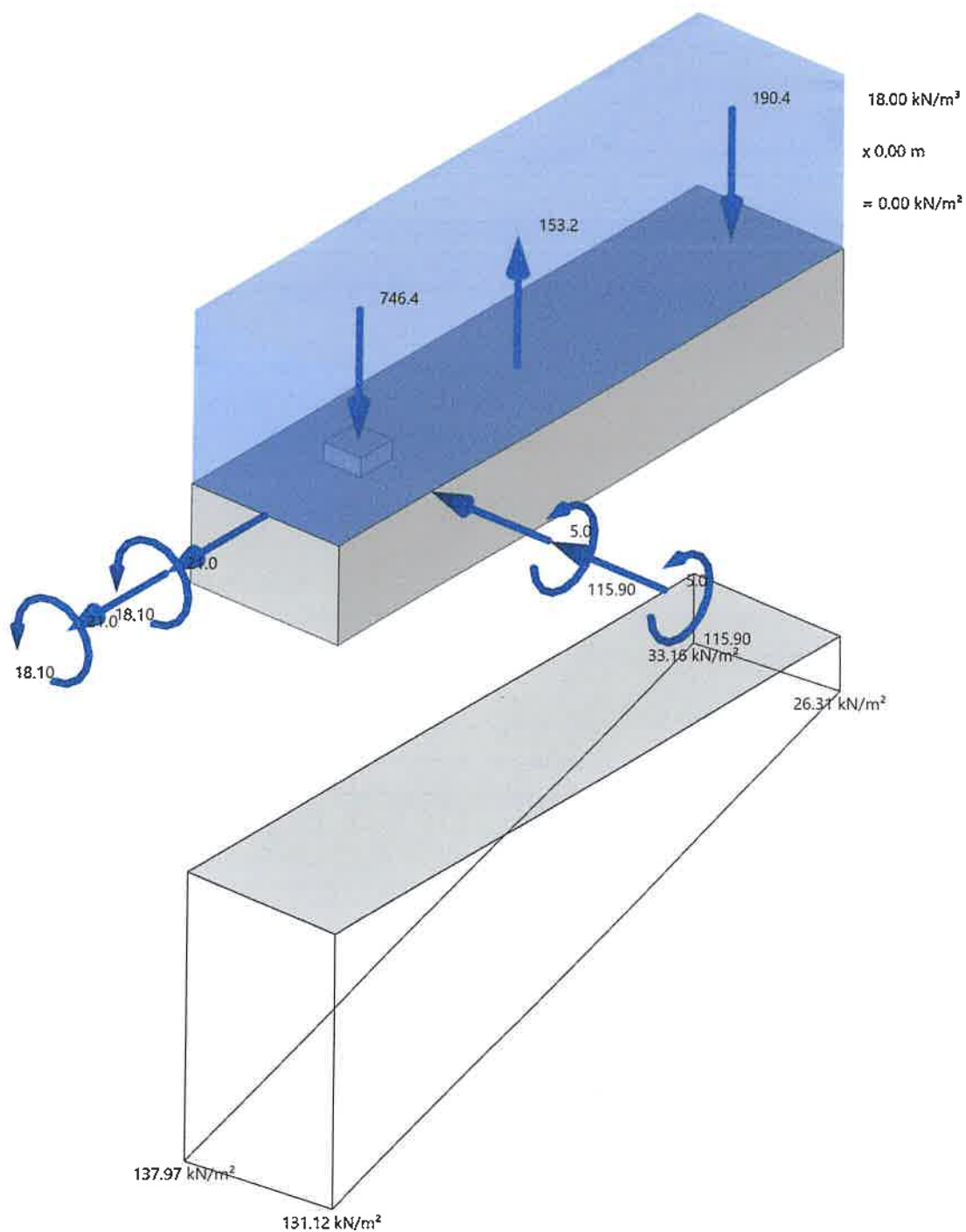
Load case 6 - RC11-maxMx-v22 (CO51) -



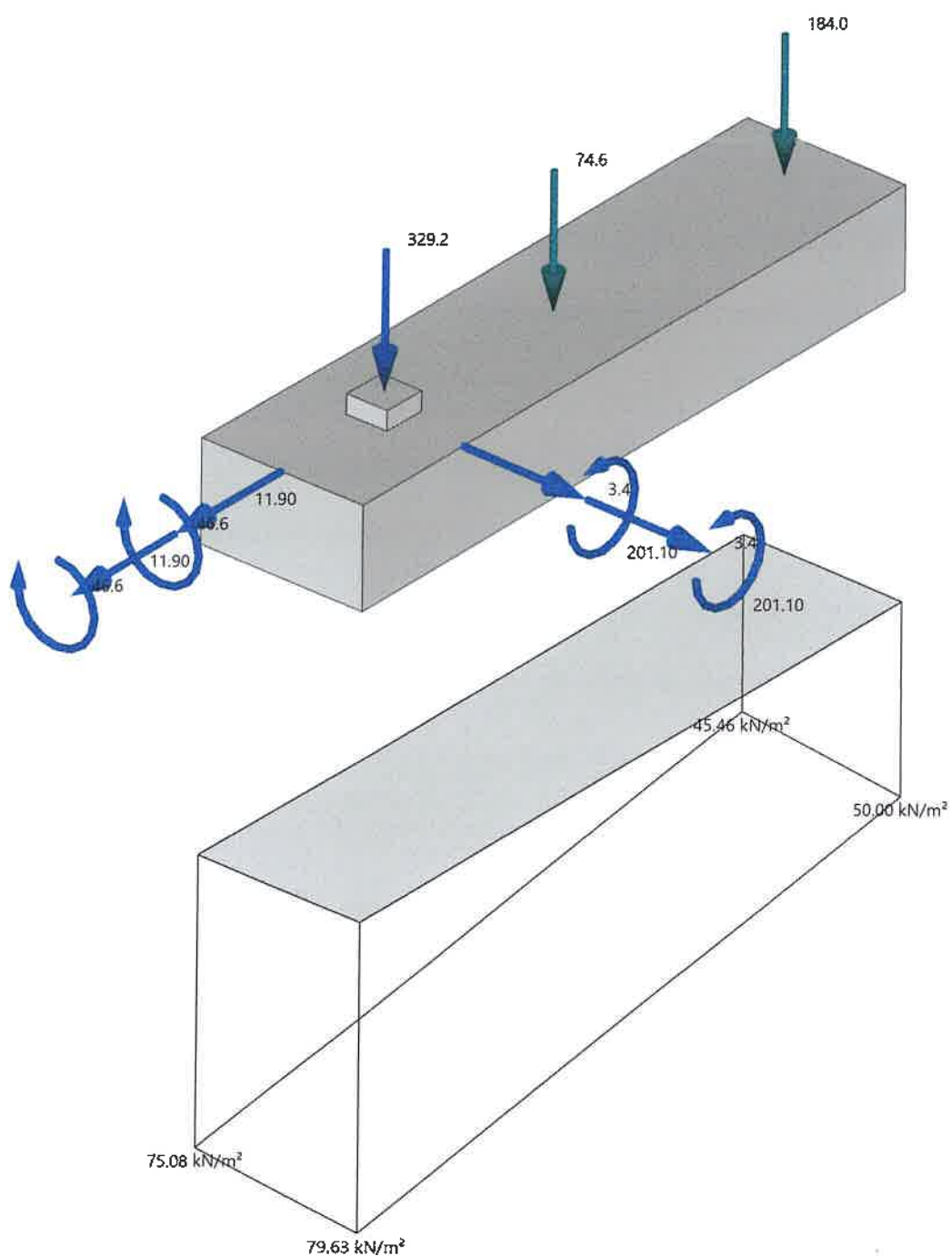
Load case 7 - Stalna-G -



Load case 8 - RC12-SLS (CO169) -



Load case 9 - RC10-Potres -



Results

Preview Checks

Check	Load case I	η_I	Load case II	η_{II}
Gaping joint only permanent loads ULS	7 ^I	0.17	7 ^I	0.01
Gaping joint permanent and variable loads ULS	2 ^I	0.37	2 ^I	0.37
Gaping joint only permanent loads SLS characteristic	7 ^I	0.12	7 ^I	0.003
Gaping joint permanent and variable loads SLS characteristic	2 ^I	0.24	2 ^I	0.24
Stability	3 ^I	0.43	3 ^I	0.43
Uplift check	2 ^I	0.21	2 ^I	0.21
Simplified method ULS	1 ^I	0.31	1 ^I	0.33
Inclination of base pressure resultant	3 ^I	0.24	3 ^I	0.24

1 : Or corresponding load case with the same designation.

Preview Reinforcement

Type	Load case	cm2
Bending $AS_{x,u}$	2 ^I	147.3
Bending $AS_{y,u}$	3 ^I	36.4
Bending $AS_{y,o}$	5 ^I	36.7

1 : Or corresponding load case with the same designation.

The inclination of the characteristic or representative base pressure resultant First order effects

$\tan \delta = H/V = 0.05 \leq 0.20$

The inclination of the characteristic or representative base pressure resultant makes the simplified check possible.

Design value of the bearing pressure resistance $\sigma_{R,d} = 400.00 \text{ kN/m}^2$

$\sigma_{R,d} = 430.77 \text{ kN/m}^2$. The design value of bearing pressure resistance has been specified directly. Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$.

Simplified method Resulting Load Case

No.	LS	DS	N_d kN	R_0 kN	a' m	b' m	σ_d kN/m ²	$\sigma_{R,d}$ kN/m ²	η
1 _I	GEO	T	1926.0	0.0	2.19	6.56	134.15	430.77	0.31
1 _{II}	GEO	T	1926.0	0.0	2.19	6.27	140.49	430.77	0.33

1 : Increase due to transient design situation : $\gamma_{R,p}/\gamma_{R,t} = 1,4/1,3 = (107.7 \%)$

The bearing pressure is influenced by partial safety factors.

Gaping joint

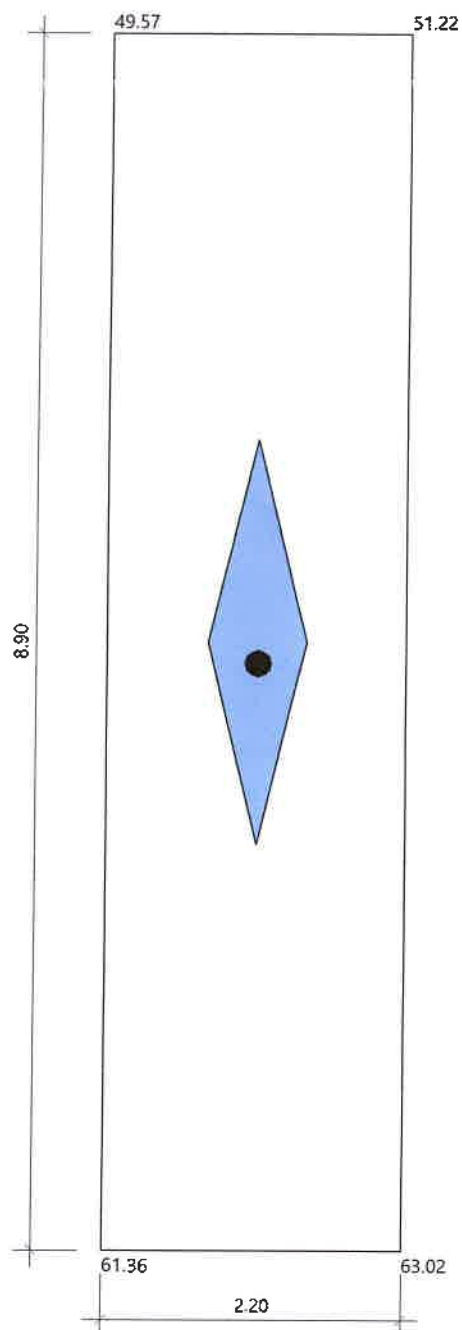
Gaping joint to EN 1997-1:2004/AC:2009 Resulting Load Case First order effects and second order effects

No.	LS	DS	N kN	e_x m	e_y m	$a^*/(1/6)$	$b^*/(1/9)$	η_G	$\eta_{G,Q}$
7 _I	EQU	P	1018.2	0.01	-0.22	0.028/0.167	0.001/0.111	0.17	0.37
7 _{II}	EQU	P	1018.2	0.01	-0.22			0.01	
2 _I	EQU	T	1287.1	-0.01	-1.81	0.020/0.167	0.041/0.111	0.12	0.37
2 _{II}	EQU	T	1287.1	-0.01	-1.81		0.041/0.111		
7 _I	SLS	P	1102.2	0.01	-0.16		0.000/0.111	0.003	0.24
7 _{II}	SLS	P	1102.2	0.01	-0.16				
2 _I	SLS	T	1137.5	-0.01	-1.46	0.027/0.111	0.027/0.111	0.027/0.111	0.24
2 _{II}	SLS	T	1137.5	-0.01	-1.46				

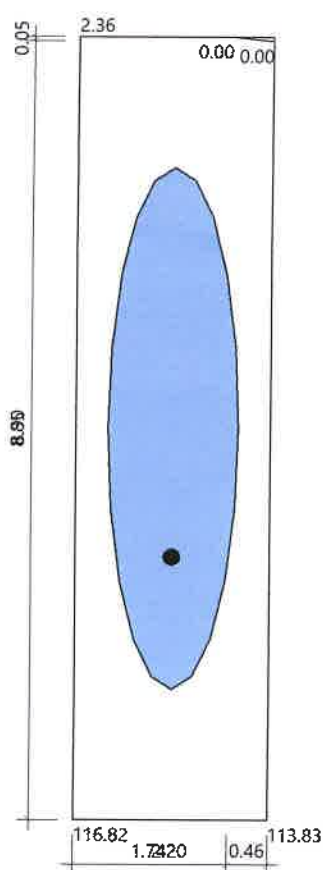
$a^* = e_x/b_x + e_y/b_y$ $b^* = (e_x/b_x)^2 + (e_y/b_y)^2$ $\eta_G = a^*/(1/6)$ $\eta_{G,Q} = b^*/(1/9)$

If no relevant characteristic load cases have been defined, the verification of the gaping joint has been reduced to a characteristic level using reduction factors.

Graphic only permanent loads



Graphic permanent and variable loads



Bending

Design Result Load Cases

LC	M _{yu,Ed} kNm	M _{xu,Ed} kNm	M _{yo,Ed} kNm	M _{xo,Ed} kNm	A _{s,xu} cm ²	A _{s,yu} cm ²	A _{s,xo} cm ²	A _{s,yo} cm ²
2 ¹	236.03	265.16	0.00	-593.80	147.3*	36.4*	0.0	36.7*
3	214.06	301.30	0.00	-823.67	147.3*	36.4*	0.0	36.7*
5	112.51	249.49	0.00	-1608.50	147.3*	36.4*	0.0	36.7*

*: Minimal reinforcement by EN 1992-1-1:2004/A1:2014 9.2.1.1 (1)

1 : Or corresponding load case with the same designation.

Reinforcement layer Reinforcement in x-direction d_{1,x} = 5.9 cm. Reinforcement layer Reinforcement in y-direction d_{1,y} = 5.9 cm. Reinforcement layer Reinforcement in x-direction d_{2,x} = 4.8 cm. Reinforcement layer Reinforcement in y-direction d_{2,y} = 4.8 cm. Rounded bending moment from the axis of the column. 20% transverse reinforcement was taken into account.

Reinforcement in x-direction bottom (m,cm²)

from	-445.0	-222.5	222.5
to	-222.5	222.5	445.0
Width	222.5	445.0	222.5
	15Ø20/15.0	30Ø20/15.0	15Ø20/15.0
req. As	36.8	73.6	36.8
exist.As	47.1	93.7	47.1
req.as/m	16.5	16.5	16.5
exist.as/m	21.2	21.1	21.2
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in y-direction bottom (m,cm²)

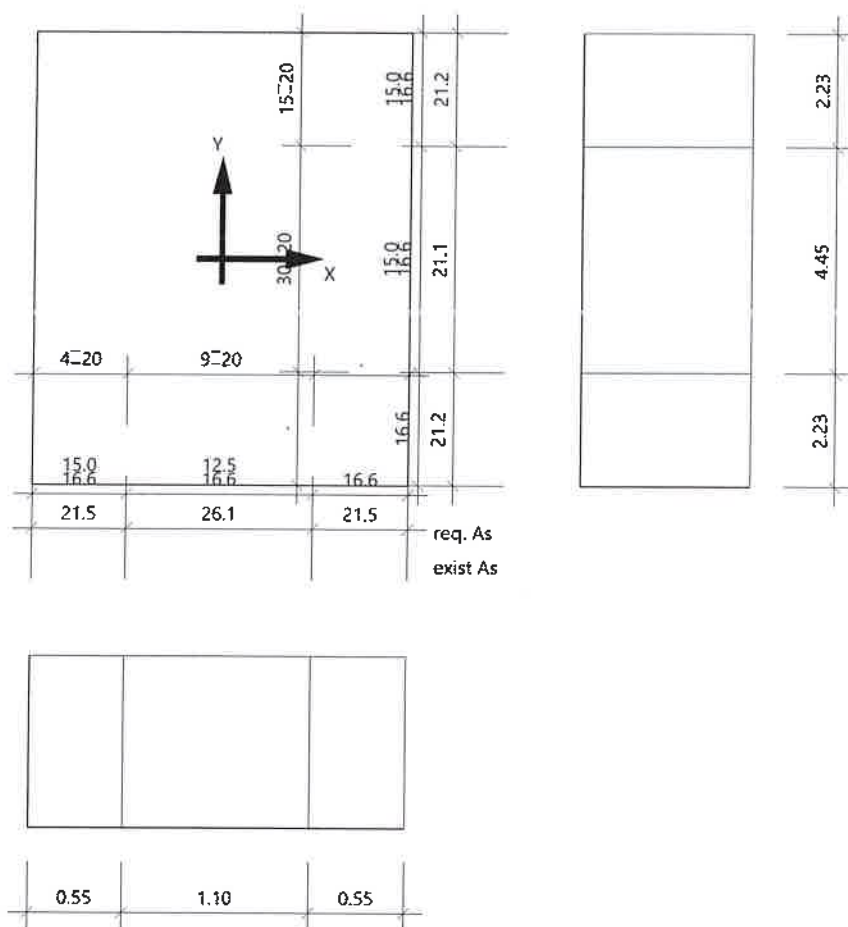
from	-110.0	-55.0	55.0
to	-55.0	55.0	110.0
Width	55.0	110.0	55.0
	4Ø20/15.0	9Ø20/12.5	4Ø20/15.0
req. As	9.1	18.2	9.1
exist.As	11.8	28.7	11.8
req.as/m	16.5	16.5	16.5
exist.as/m	21.5	26.1	21.5
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm			

Reinforcement in x-direction top (m,cm²)

from	-445.0	
to	445.0	
Width	890.0	
	56Ø16/15.0	
req. As	0.0	
exist.As	112.6	
req.as/m	0.0	
exist.as/m	12.6	
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm		

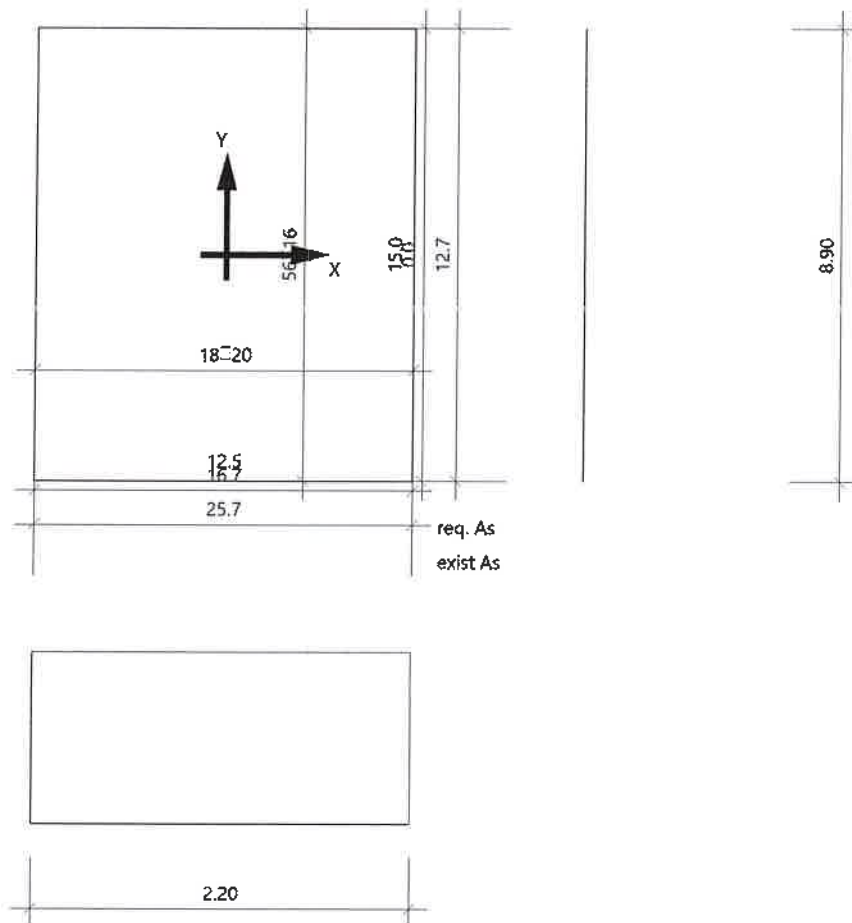
Reinforcement in y-direction top (m,cm²)

from	-110.0	
to	110.0	
Width	220.0	
	18Ø20/12.5	
req. As	36.7	
exist.As	56.6	
req.as/m	16.7	
exist.as/m	25.7	
Concrete cover bottom: 5.1 cm Concrete cover on the side: 5.1 cm Concrete cover above: 5.1 cm		

Reinforcement Distribution bottom in m, cm²/m

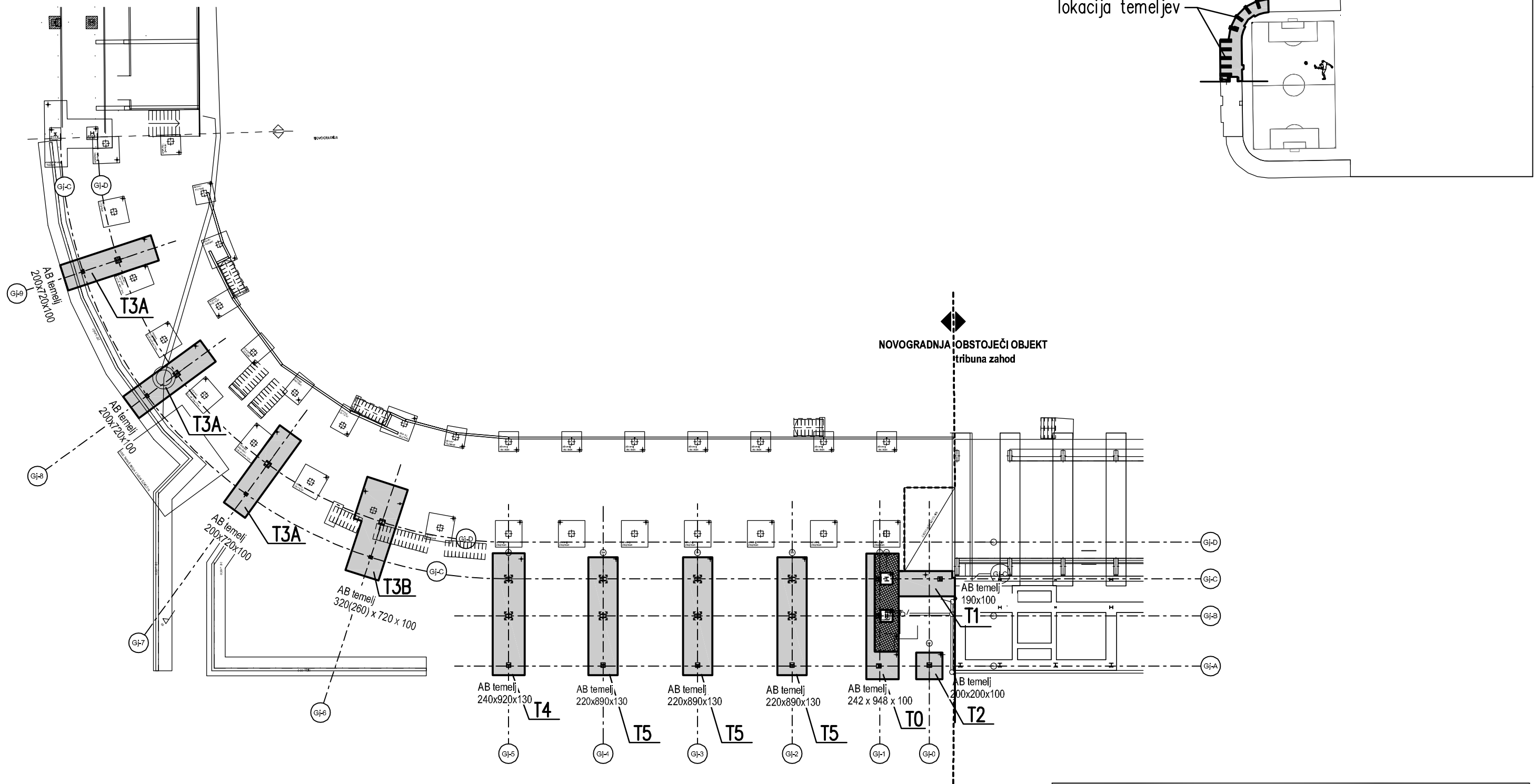
In order to ensure the transverse carrying capacity, the foundation has been dimensioned in the punching range for minimum moments according to equation (NA.6.54.1), provided the shear force determination has not led to higher values.

Reinforcement Distribution top in m, cm²/m

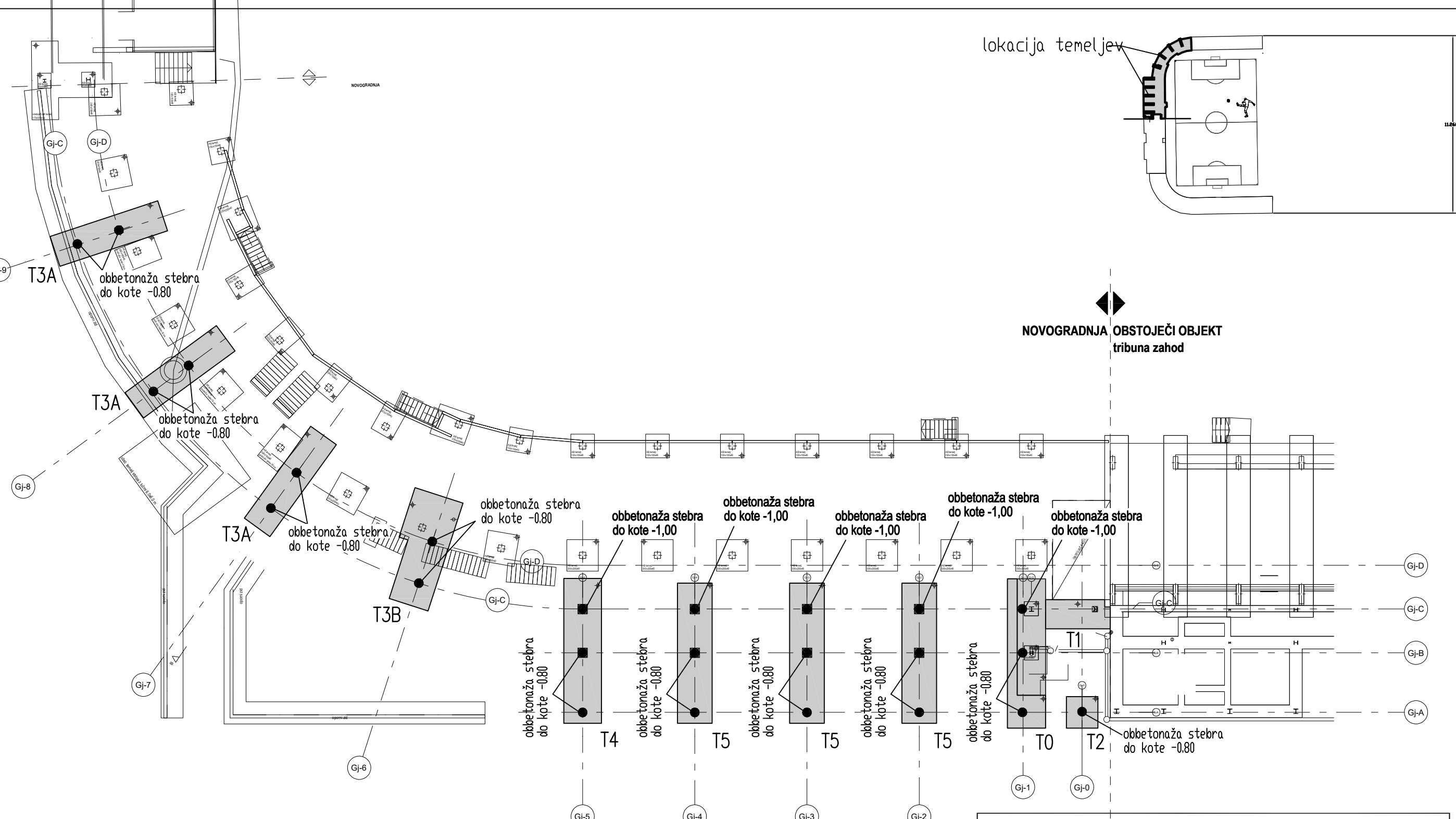


2.3.5	RISBE - TEHNIČNI PRIKAZ ARMATURE (POZICIJSKI IN ARMATURNI NAČRTI)																						
	<table> <tr> <td data-bbox="368 387 630 421"><u>POZICIJSKI NAČRTI</u></td><td data-bbox="1329 387 1401 421">list.št.:</td></tr> <tr> <td data-bbox="368 454 528 488">Tloris temeljev</td><td data-bbox="1329 454 1362 488">P-1</td></tr> <tr> <td data-bbox="368 521 643 555"><u>ARMATURNI NAČRTI</u></td><td data-bbox="1329 521 1401 555">list št.:</td></tr> <tr> <td data-bbox="451 589 783 622">- POZ-T3A AB točkovni temelj</td><td data-bbox="1329 589 1342 622">1</td></tr> <tr> <td data-bbox="451 624 783 658">- POZ-T3B AB točkovni temelj</td><td data-bbox="1329 624 1342 658">2</td></tr> <tr> <td data-bbox="451 660 767 694">- POZ-T4 AB točkovni temelj</td><td data-bbox="1329 660 1342 694">3</td></tr> <tr> <td data-bbox="451 696 767 730">- POZ-T5 AB točkovni temelj</td><td data-bbox="1329 696 1342 730">4</td></tr> <tr> <td data-bbox="451 732 767 766">- POZ-T2 AB točkovni temelj</td><td data-bbox="1329 732 1342 766">5</td></tr> <tr> <td data-bbox="451 768 767 801">- POZ-T1 AB točkovni temelj</td><td data-bbox="1329 768 1342 801">6</td></tr> <tr> <td data-bbox="451 804 847 837">- POZ-T0 AB točkovni temelj (tlorisi)</td><td data-bbox="1329 804 1342 837">7</td></tr> <tr> <td data-bbox="451 840 863 873">- POZ-T0 AB točkovni temelj (prerezi)</td><td data-bbox="1329 840 1342 873">8</td></tr> </table>	<u>POZICIJSKI NAČRTI</u>	list.št.:	Tloris temeljev	P-1	<u>ARMATURNI NAČRTI</u>	list št.:	- POZ-T3A AB točkovni temelj	1	- POZ-T3B AB točkovni temelj	2	- POZ-T4 AB točkovni temelj	3	- POZ-T5 AB točkovni temelj	4	- POZ-T2 AB točkovni temelj	5	- POZ-T1 AB točkovni temelj	6	- POZ-T0 AB točkovni temelj (tlorisi)	7	- POZ-T0 AB točkovni temelj (prerezi)	8
<u>POZICIJSKI NAČRTI</u>	list.št.:																						
Tloris temeljev	P-1																						
<u>ARMATURNI NAČRTI</u>	list št.:																						
- POZ-T3A AB točkovni temelj	1																						
- POZ-T3B AB točkovni temelj	2																						
- POZ-T4 AB točkovni temelj	3																						
- POZ-T5 AB točkovni temelj	4																						
- POZ-T2 AB točkovni temelj	5																						
- POZ-T1 AB točkovni temelj	6																						
- POZ-T0 AB točkovni temelj (tlorisi)	7																						
- POZ-T0 AB točkovni temelj (prerezi)	8																						

lokacija temeljev



 karlovšek d.o.o. - SINCE 1985 - DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Skoka 7, 1230 Domžale, Slovenija tel: 051-618-796, e-mail: Karlovsek7@siol.net				IZS 0763	
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj:	PZI		
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj:	397/25		
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta:	119/25		
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo		št. risbe	
Vsebina risbe:	POZICIJSKI NAČRT TLORIS TEMELJEV	1: 300		P-1	
		ident. št.:		datum	
Vodja projektiranja:	ANDREJ KALAMAR udia	ZAPS	0091 A	28.7.2025	
Pooblaščen inženir:	GREGOR GREGORC udig	G-0493		28.7.2025	
Sodelavec:	BLAŽ PERKO gt			28.7.2025	



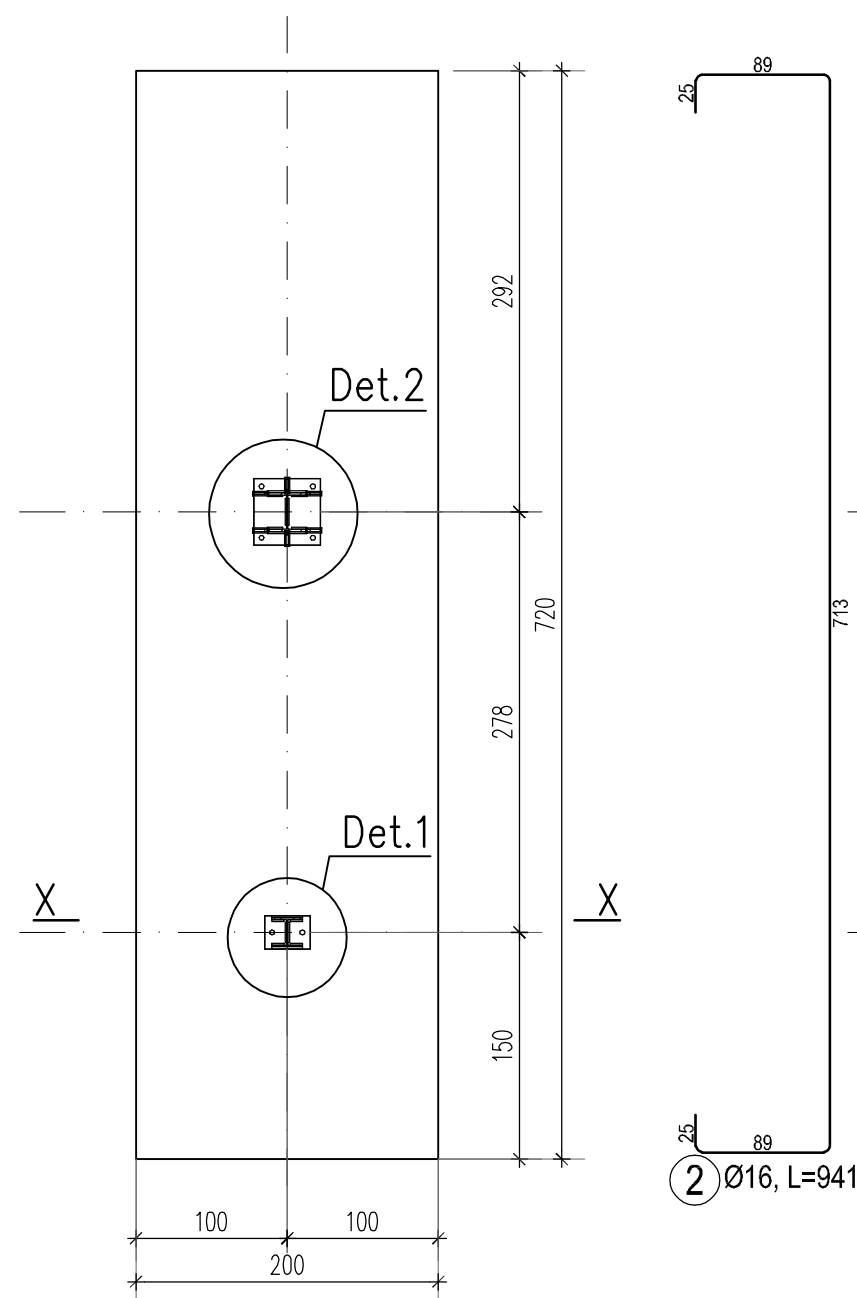
Opomba:
Višino obbetonaže uskladiti z načrtom arhitekture in
in načrtom jeklene konstrukcije !

**karlovšek** d.o.o. - SINCE 1985 -
DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING
Antona Skoka 7, 1230 Domžale, Slovenija
tel: 051-618-796, e-mail: Karlovsek7@siol.net

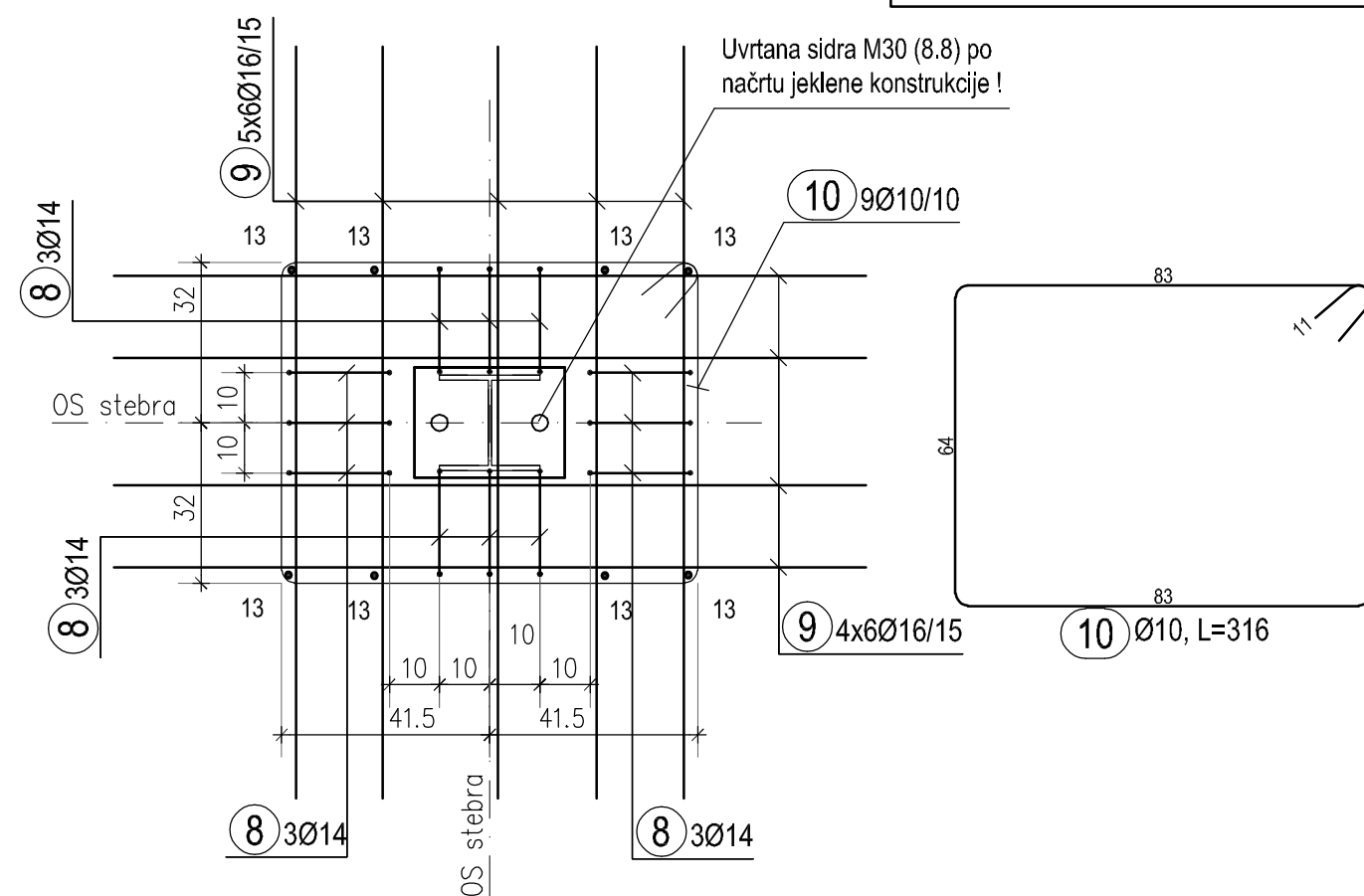
IZS 0763

Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.:	PZI
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.:	397/25
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta.:	119/25
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebina risbe:	POZICIJSKI NAČRT OBBETONIRANJE KOVINSKIH STEBROV	1: 250	P-2
		ident. št.:	datum
Vodja projektiranja:	ANDREJ KALAMAR udia	ZAPS	0091 A
Pooblaščen inženir:	GREGOR GREGORC udig	G-0493	28.7.2025
Sodelavec:	BLAŽ PERKO gt		28.7.2025

POZ-T3A
TLORIS TEMELJA – DIMENZIJE



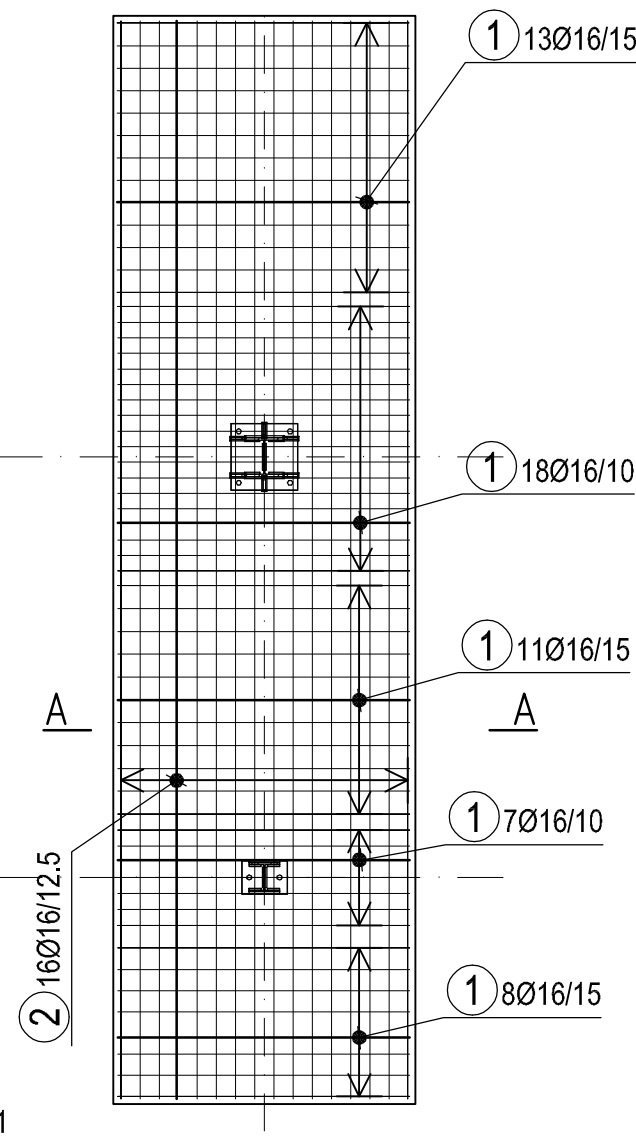
Sidrni koš pod stebrom M 1:15
Detajl 1 (S5)



POZ-T3A
TLORIS TEMELJA – ARMATURA SPODAJ M 1:50

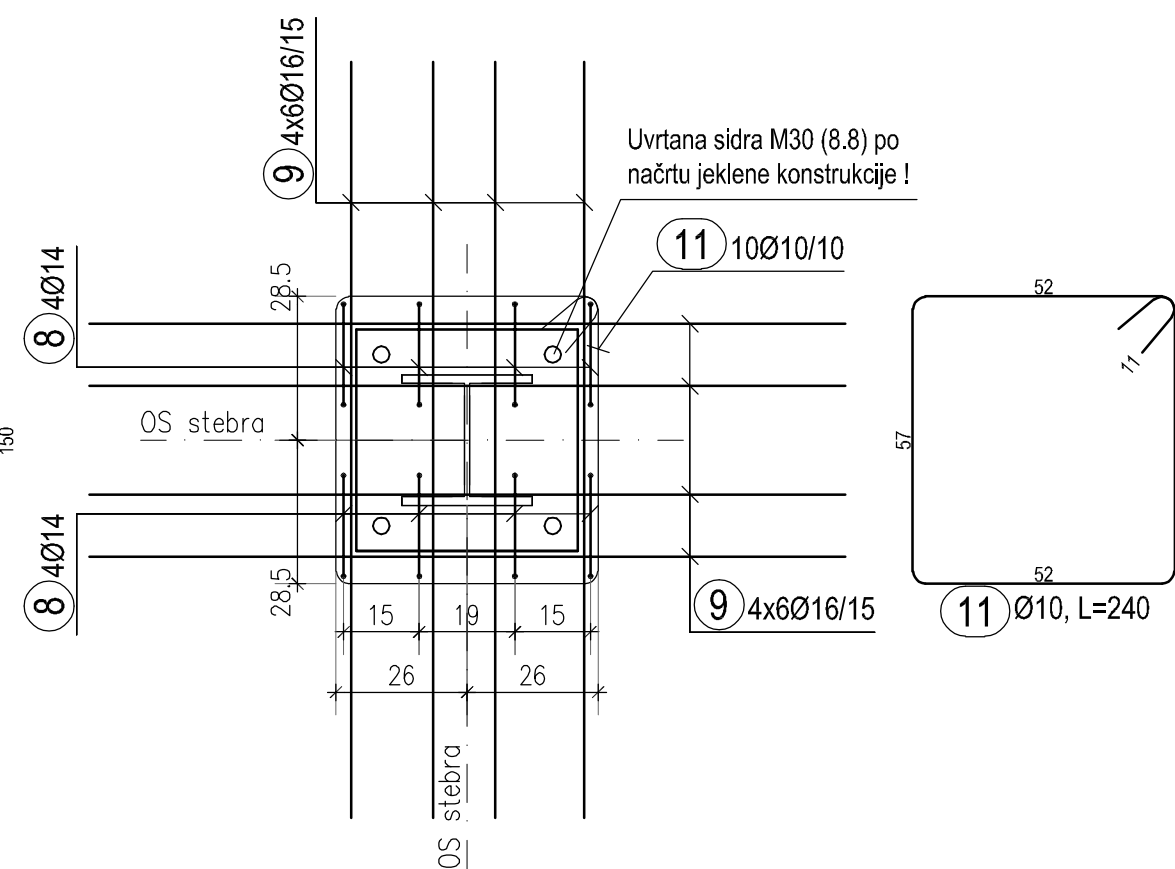
POZOR !

- Na območju sidranja jeklenih stebrov je potrebno potek palic prilagoditi lokaciji sider !
- Dodatno armaturo –koše na območju stebrov glej detaíl 1 in 2 !

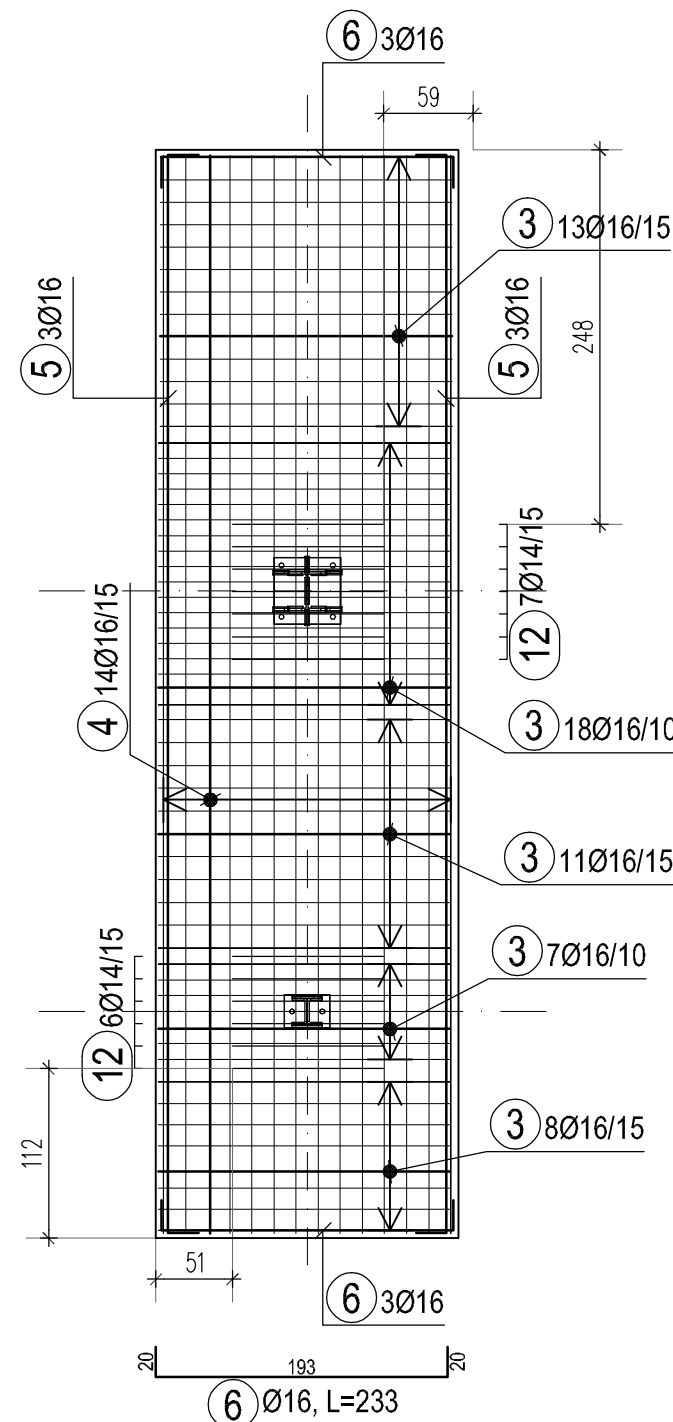


Armaturne koše je potrebno locirati točno na mestih predvidenih sider za jeklen steber !

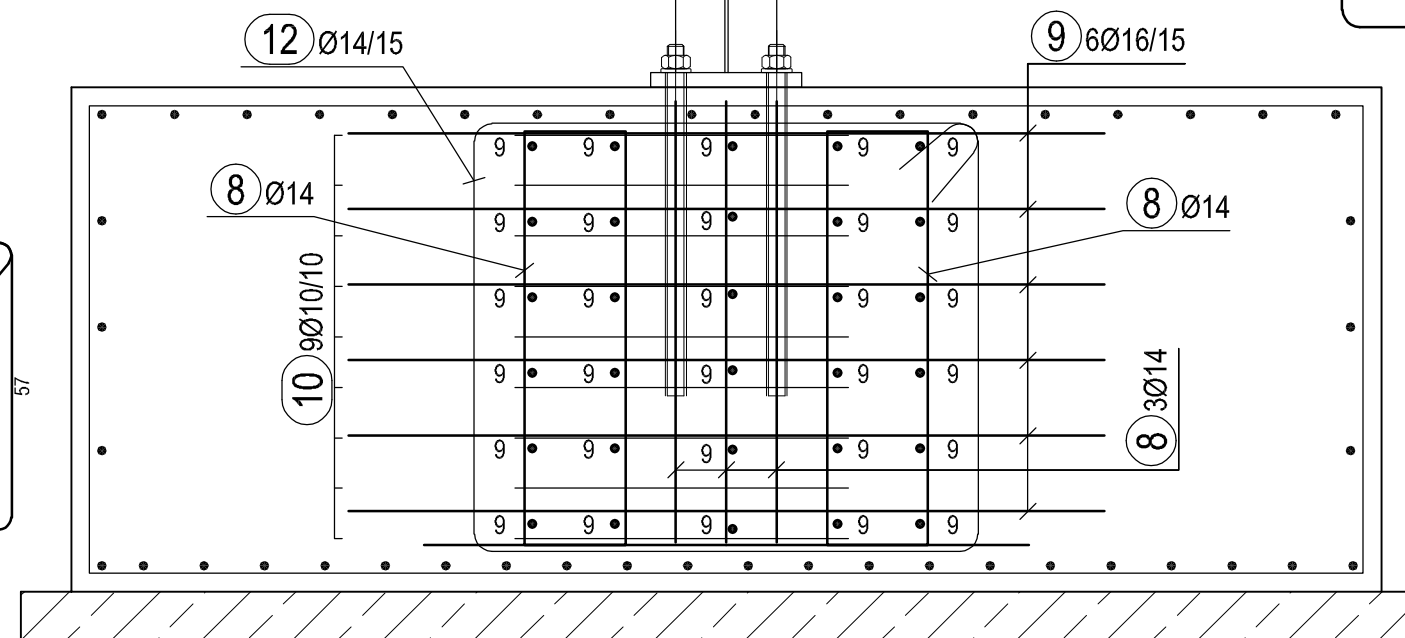
Sidrni koš pod stebrom M 1:15
Detajl 2 (S4)



P0Z-T3A
TŁORIS TEMELJA – ARMATURA ZGORAJ M 1:50

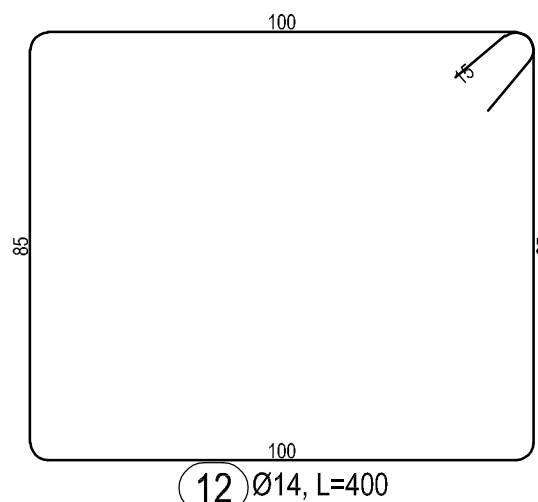
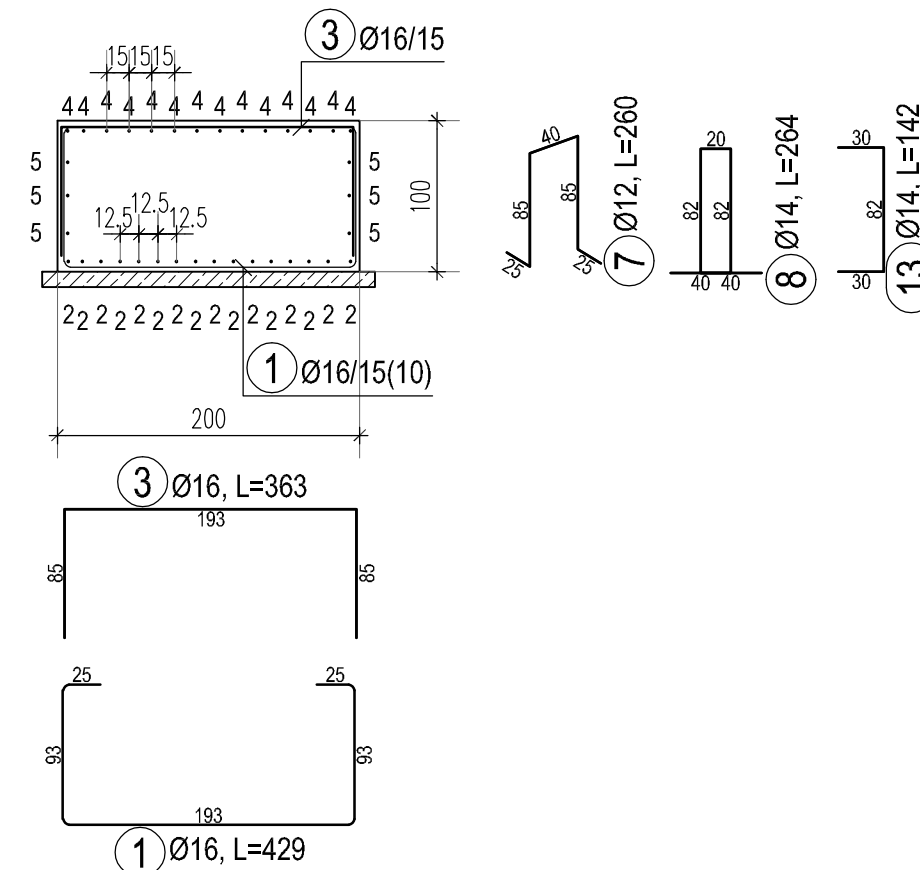


Sidrni koš pod stebrom M 1:15
Detajl 1 – v pogledu



UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !

Prerez A-A M 1:50



- PRED MONTAŽO STREHE NA TEMELJ NASUTI MIN. 60cm ZEMELJSKEGA MATERIALA !
- SIDRA ZA JEKLENO KONSTRUKCIJO VGRADITI SKLADNO Z NAČRTOM JEKLENE KONSTRUKCIJE (RAZPON d.o.o.).
- AB MONTAŽNI STEBER VGRADITI PO NAČRTU IZVAJALCA POMGRAD d.o.o.

pozicija: POZ-T3A

element: AB točkovni temelj

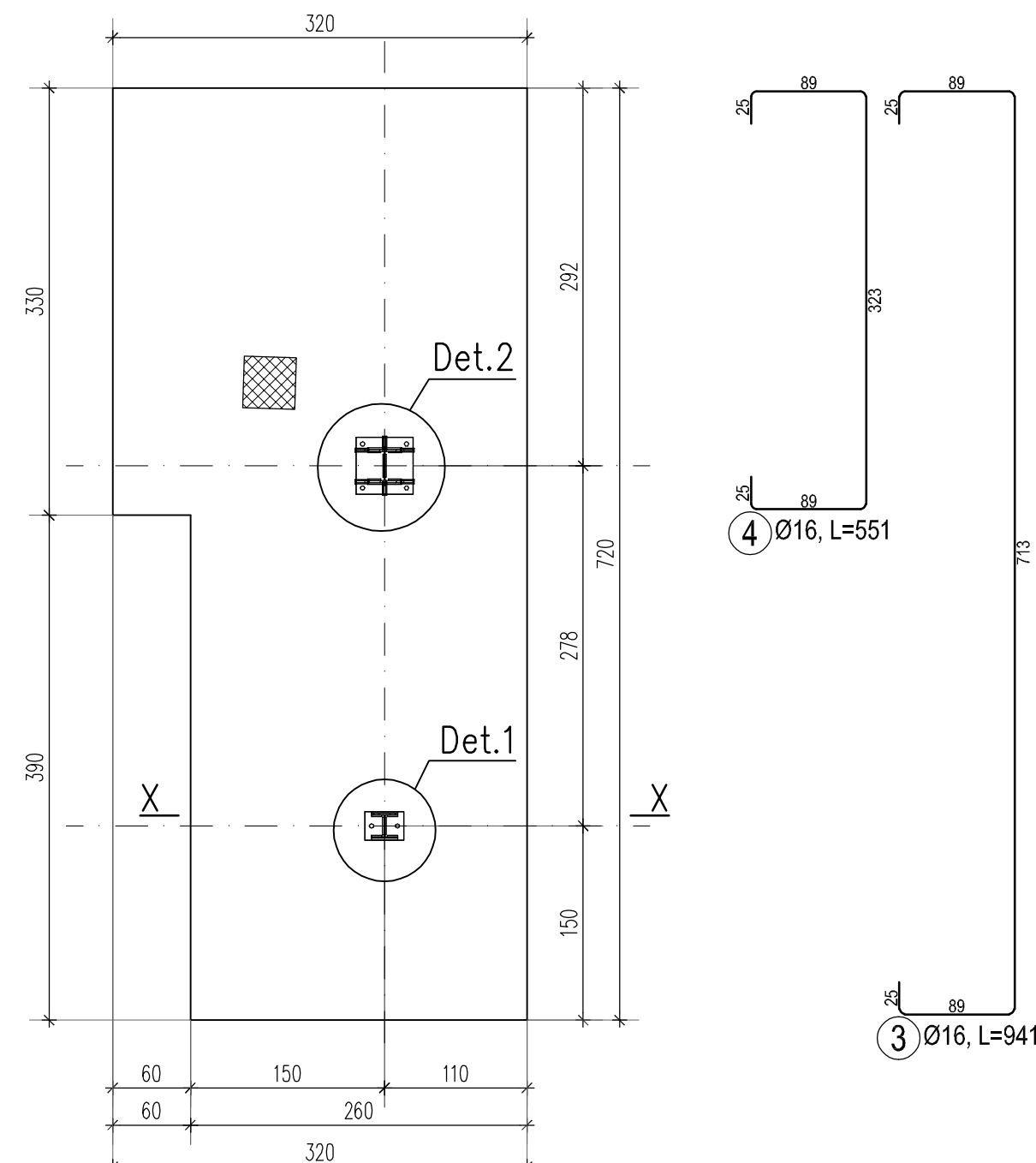
ZAHTEV PRI GRADNJI:

- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnitega nasutja se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72–04/2025, april 2025 !)
- V primeru, da se pri izkopih ugotovijo bistvena odstopanja od Geo. poročila ali projekta je potrebno o tem obvestiti odg. projektanta !
- Pred izdelavo kamnitega nasutja je potrebno na dno izkopa položiti ločilni geosintetik.
- Izvedbo kamnitega nasutja mora nadzirati geomehanik !
- Skozi temelje je potrebno pustiti vse odprtine za prehod instalacij in kanalizacije. Lego in dimenzijo odprtin glej projekt arhitekture in instalacij !

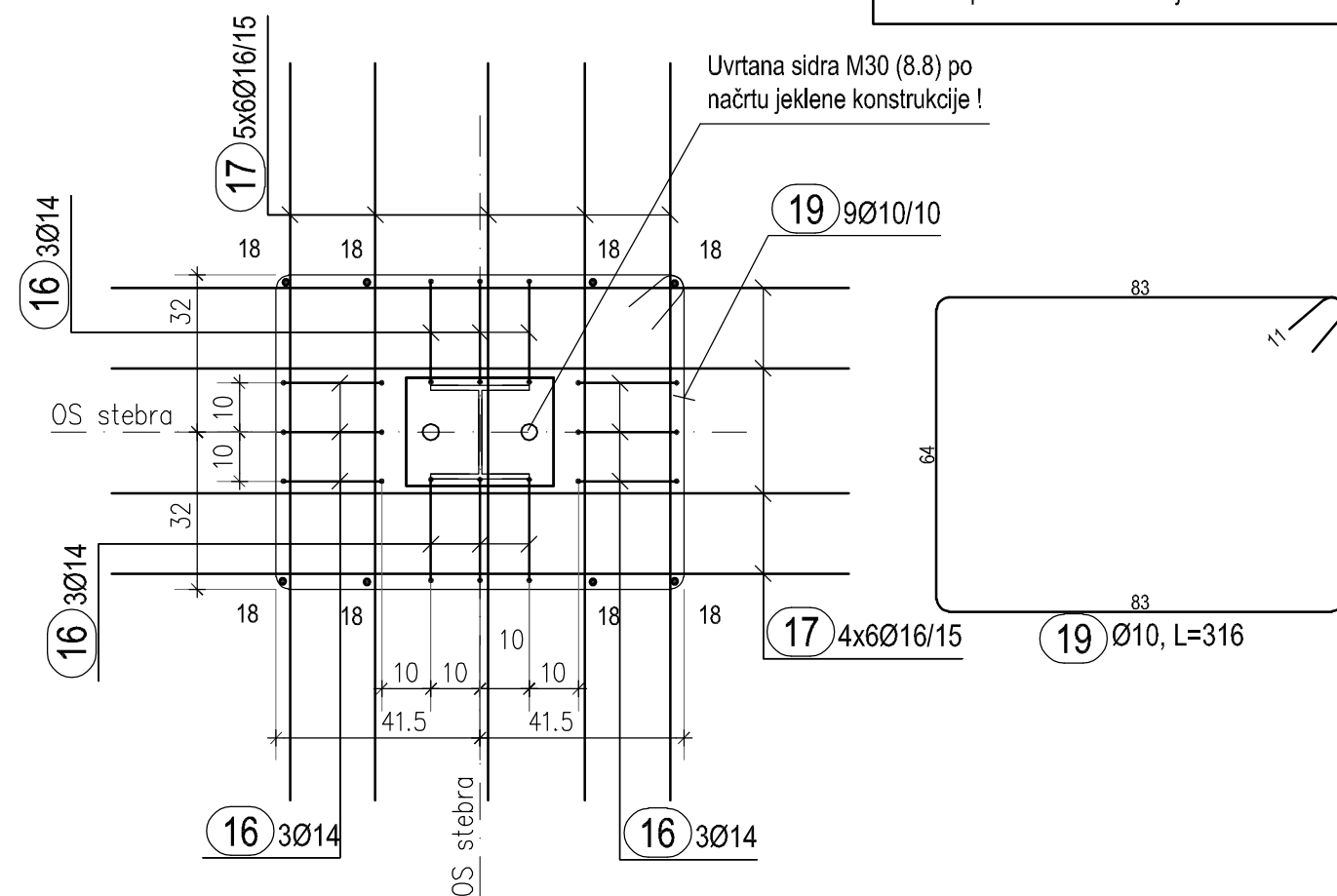
Zaštitna plast betona: 30mm	
Kvaliteta jekla: S500-B	Kvaliteta betona: C25/30-XC2

 karlovšek d.o.o. DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Skoka 7, 1230 Domžale, Slovenija tel: 051-618-796, e-mail: Karlovsek7@siol.net	- SINCE 1985 -	
	IZS 0763	
Investitor: MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.: PZI	
Naročnik: STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.: 397/25	
Objekt: STADION FAZANERIJA MURSKA SOBOTA	št. načrta.: 119/25	
Vrsta načrta: NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebina risbe: POZ-T3A AB TOČKOVNI TEMELJ	1:50,25	1
	ident. št.:	datum
Vodja projektiranja: ANDREJ KALAMAR udia	ZAPS	0091 A 4.7.2025
Paoblaščen inženir: GREGOR GREGORC udig	G-0493	4.7.2025
Sodelavec: BLAŽ PERKO gt		4.7.2025

POZ-T3B
TLORIS TEMELJA – DIMENZIJE



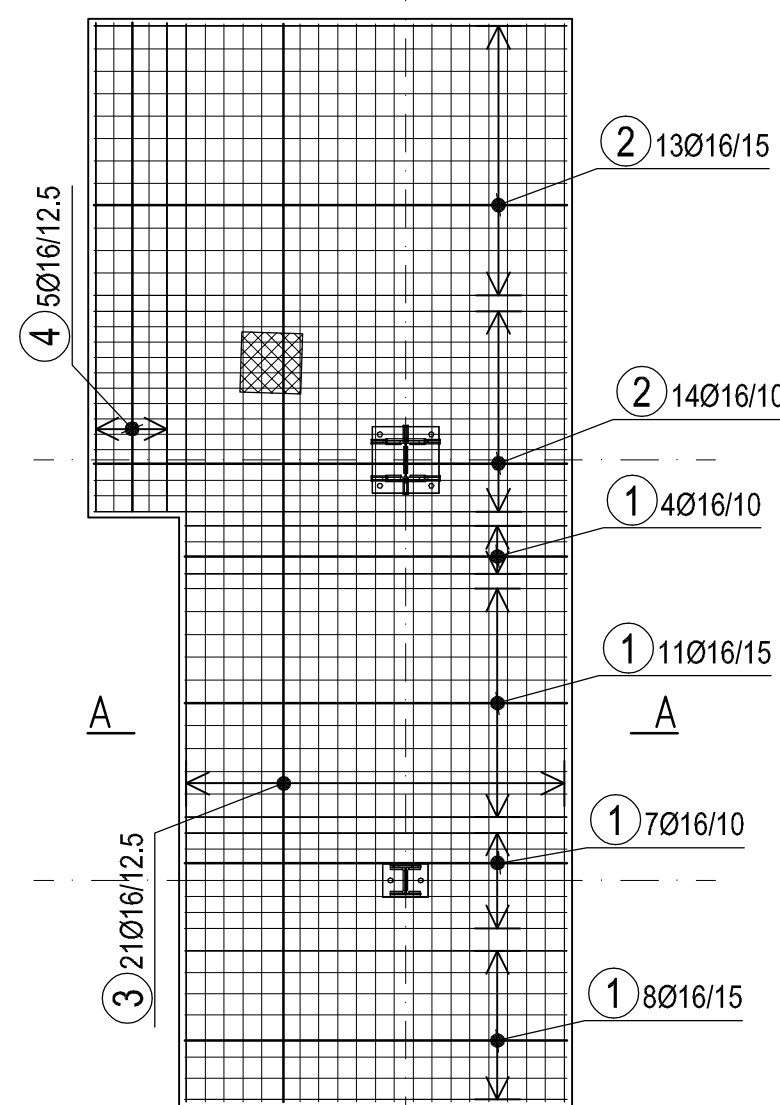
Sidrni koš pod stebrom M 1:15
Detajl 1 (S5)



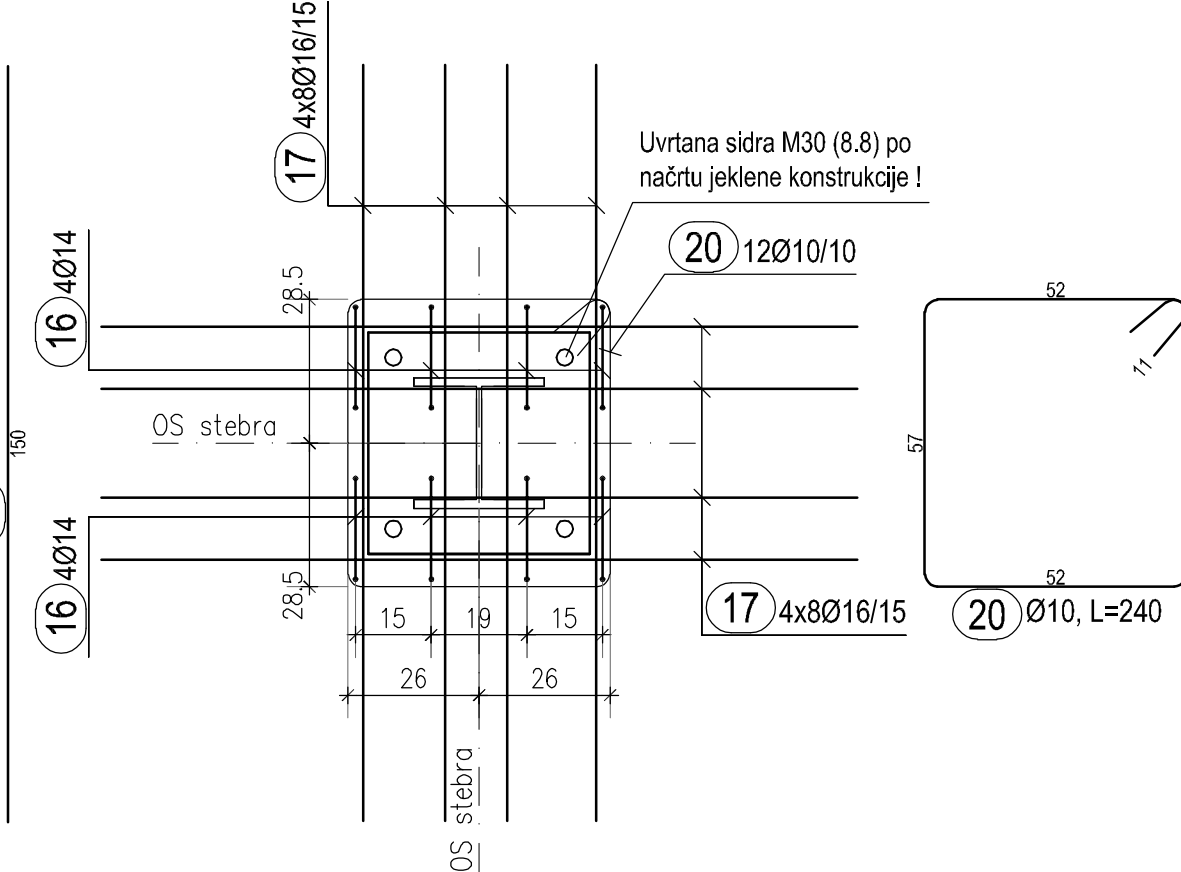
POZ-T3B
TLORIS TEMELJA – ARMATURA SPODAJ M 1:50

POZOR !

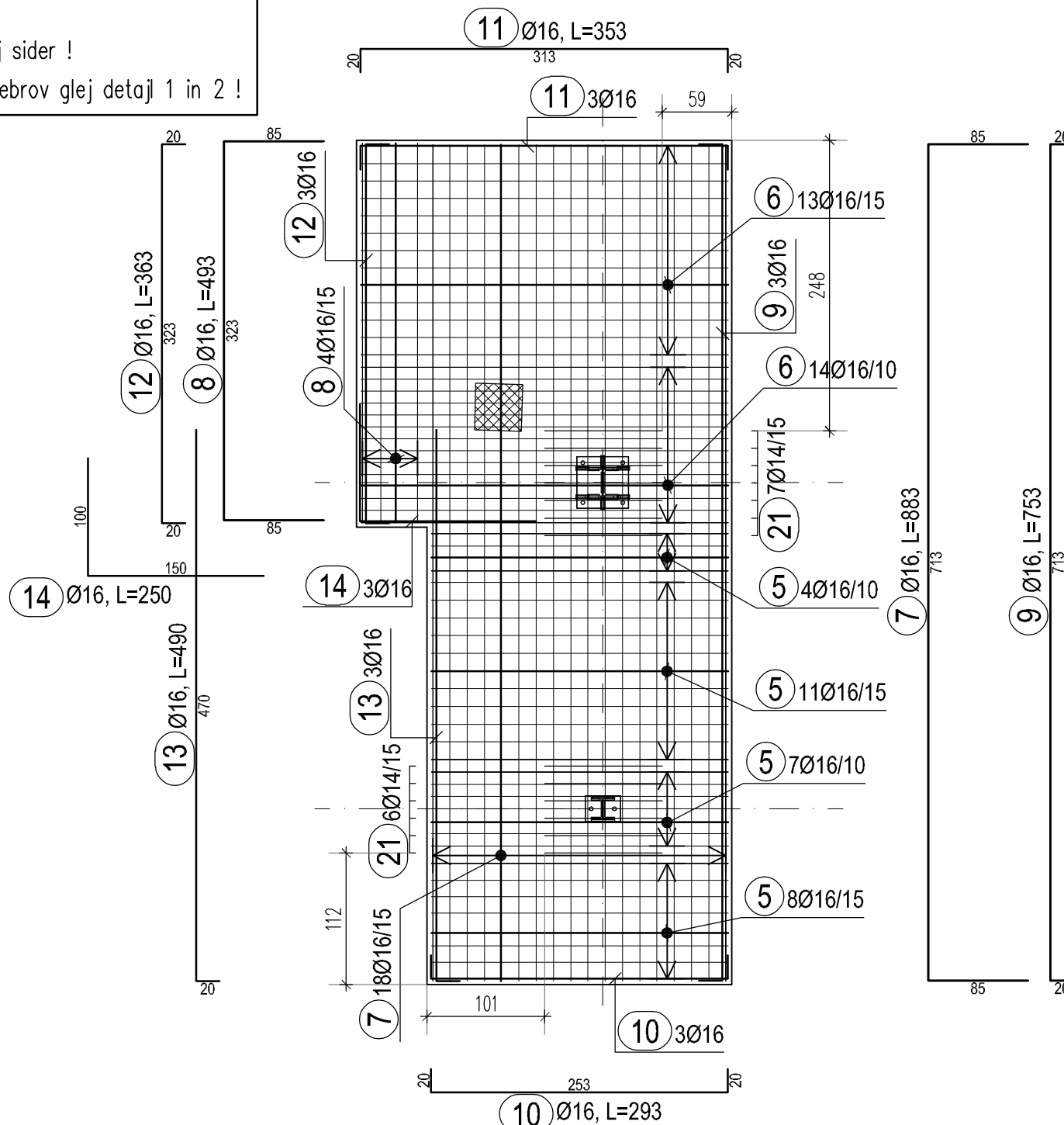
- Na območju sidranja jeklenih stebrov je potrebno potek palic prilagoditi lokaciji sider !
- Dodatno armaturo –koše na območju stebrov glej detajl 1 in 2 !



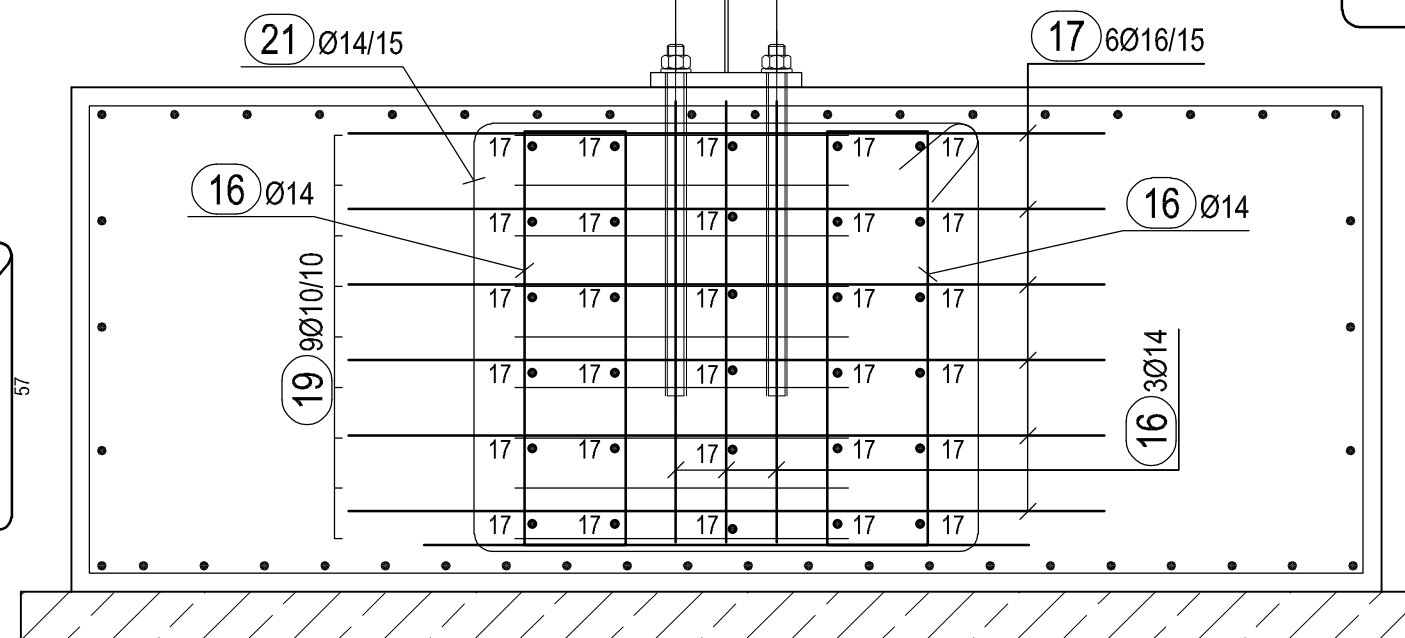
Sidrni koš pod stebrom M 1:15
Detajl 2 (S4)



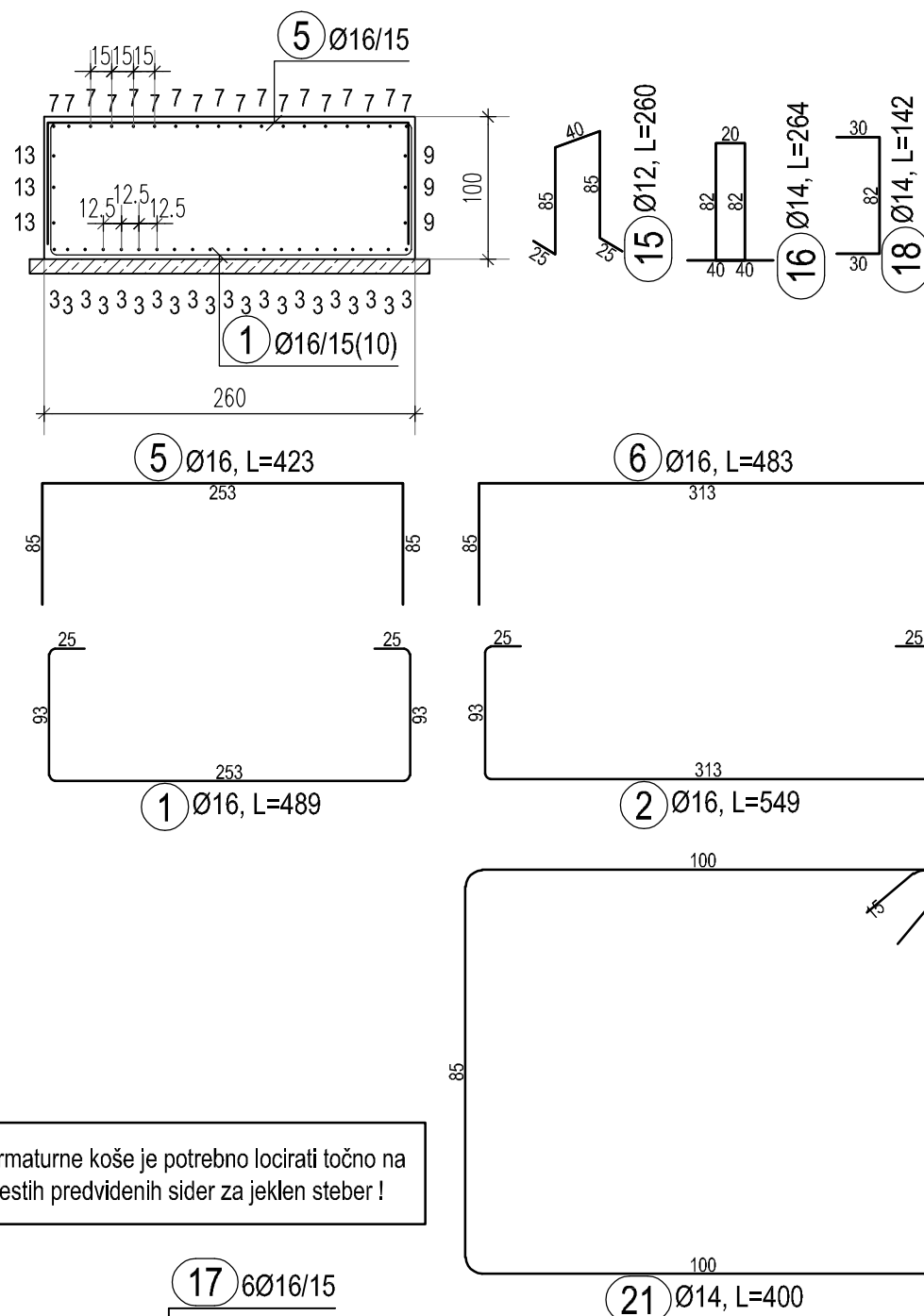
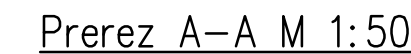
POZ-T3B
TLORIS TEMELJA – ARMATURA ZGORAJ M 1:50



Sidrni koš pod stebrom M 1:15
 Detajl 1 – v pogledu



UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !



- PRED MONTAŽO STREHE NA TEMELJ NASUTI MIN. 60cm ZEMELJSKEGA MATERIALA !
- SIDRA ZA JEKLENO KONSTRUKCIJO VGRADITI SKLADNO Z NAČRTOM JEKLENE KONSTRUKCIJE (RAZPON d.o.o.).
- AB MONTAŽNI STEBER VGRADITI PO NAČRTU IZVAJALCA POMGRAD d.o.o.

pozicija: POZ-T3B

element: AB točkovni temelj

ZAHTEV PRI GRADNJI:

- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnitega nasutja se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72-04/2025, april 2025 !
- V primeru, da se pri izkopih ugotovijo bistvena odstopanja od Geo. poročila ali projekta je potrebno o tem obvestiti odg. projektanta !
- Pred izdelavo kamnitega nasutja je potrebno na dno izkopa položiti ločilni geosintetik.
- Izvedbo kamnitega nasutja mora nadzirati geomehanika !
- Skozi temelje je potrebno pustiti vse odprtine za prehod instalacij in kanalizacije. Lego in dimenzijo odprtin glej projekt arhitekture in instalacij !

Zaštitna plast betona: 30mm	
Kvaliteta jekla: S500-B	Kvaliteta betona: C25/30-XC2



karlovšek d.o.o.

DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING
Antona Škoka 7, 1230 Domžale, Slovenija
tel: 051-618-796, e-mail: karlovsek7@iol.net

- SINCE 1985 -

IZS 0763

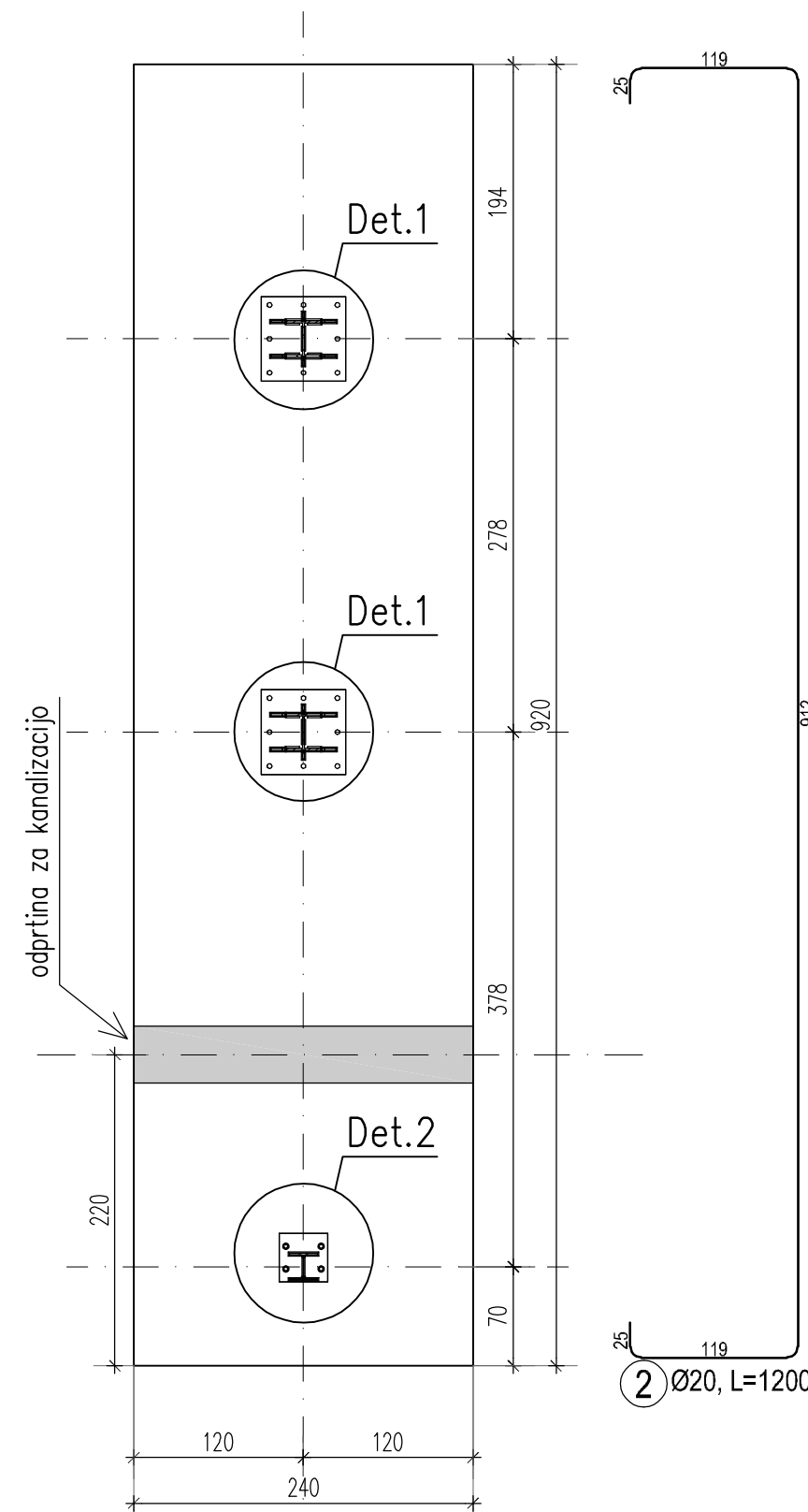
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.:	PZI
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.:	397/25
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta:	119/25
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebina risbe:	POZ – TJB AB TOČKOVNI TEMELJ	1:50,25	2
		ident. št.:	datum
Vodja projektiranja:	ANDREJ KALAMAR udia	ZAPS	0091 A 4.7.2025
Pooblaščen inženir:	GREGOR GREGORC udig	G-0493	4.7.2025
Sodelavec:	BLAŽ PERKO ot		4.7.2025

POZ-T4, kos: 1
TLORIS TEMELJA – DIMENZIJE

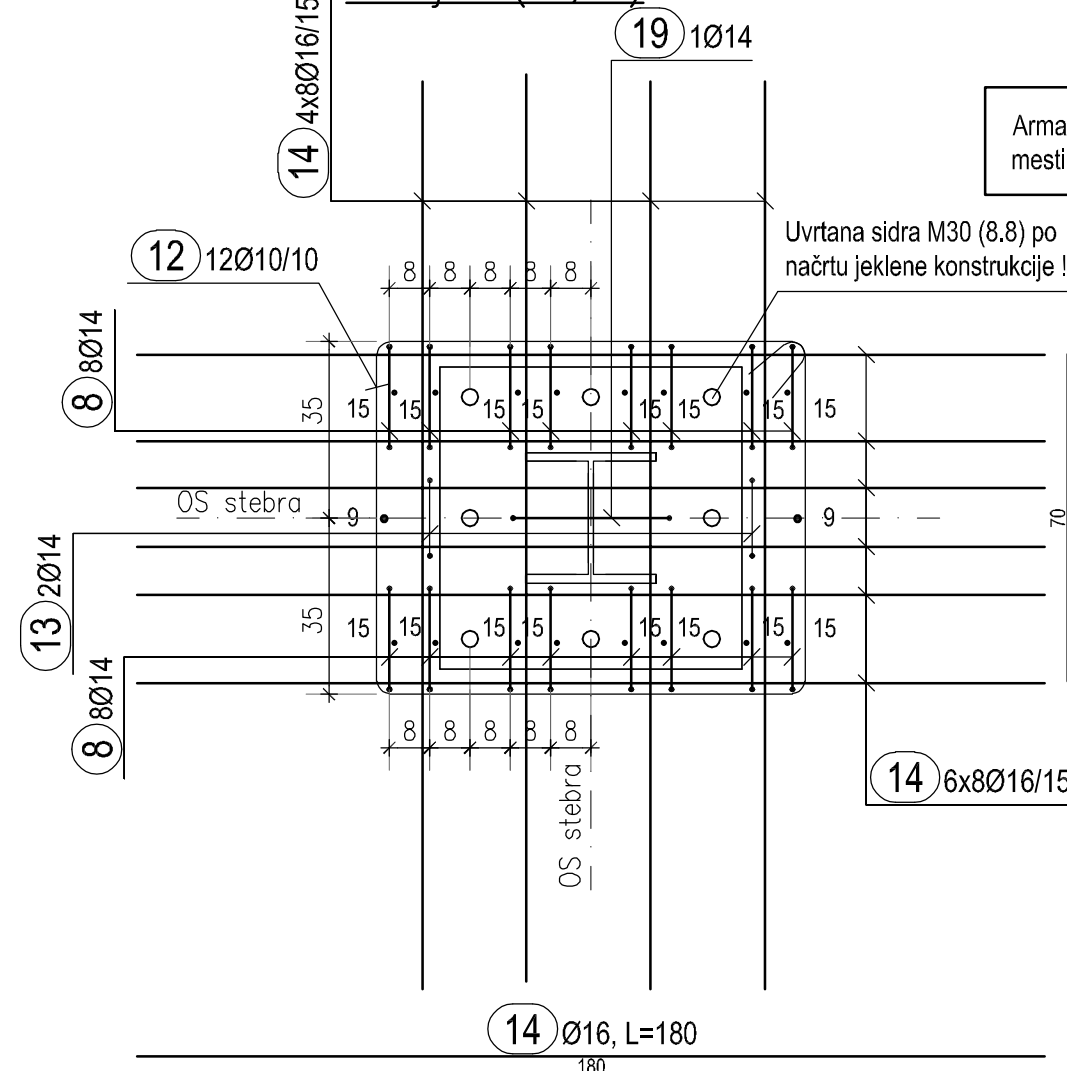
POZ-T4
TLORIS TEMELJA – ARMATURA SPODAJ M 1:50

POZ-T4
TLORIS TEMELJA – ARMATURA ZGORAJ M 1:50

- Na območju sidranja jeklenih stebrov je potrebno potek palic prilagoditi lokacij sider !
- Dodatno armaturo –koše na območju stebrov glej detajl 1 in 2 !

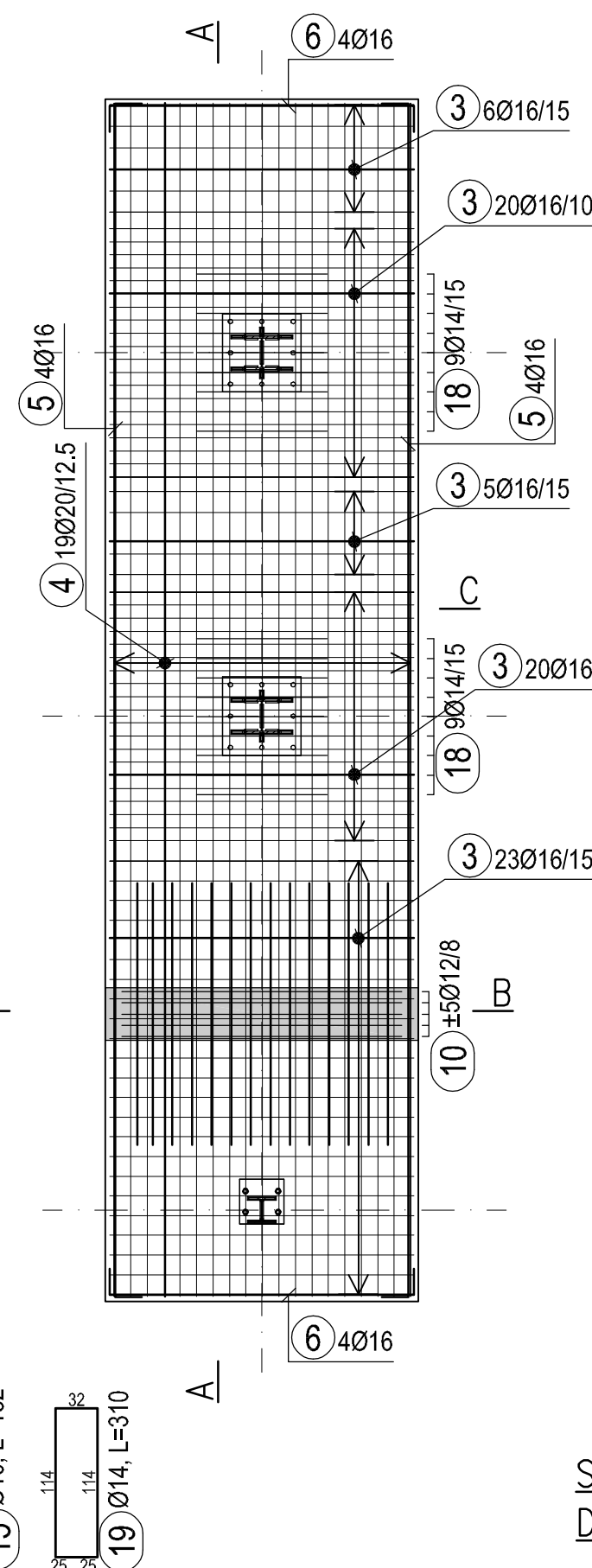
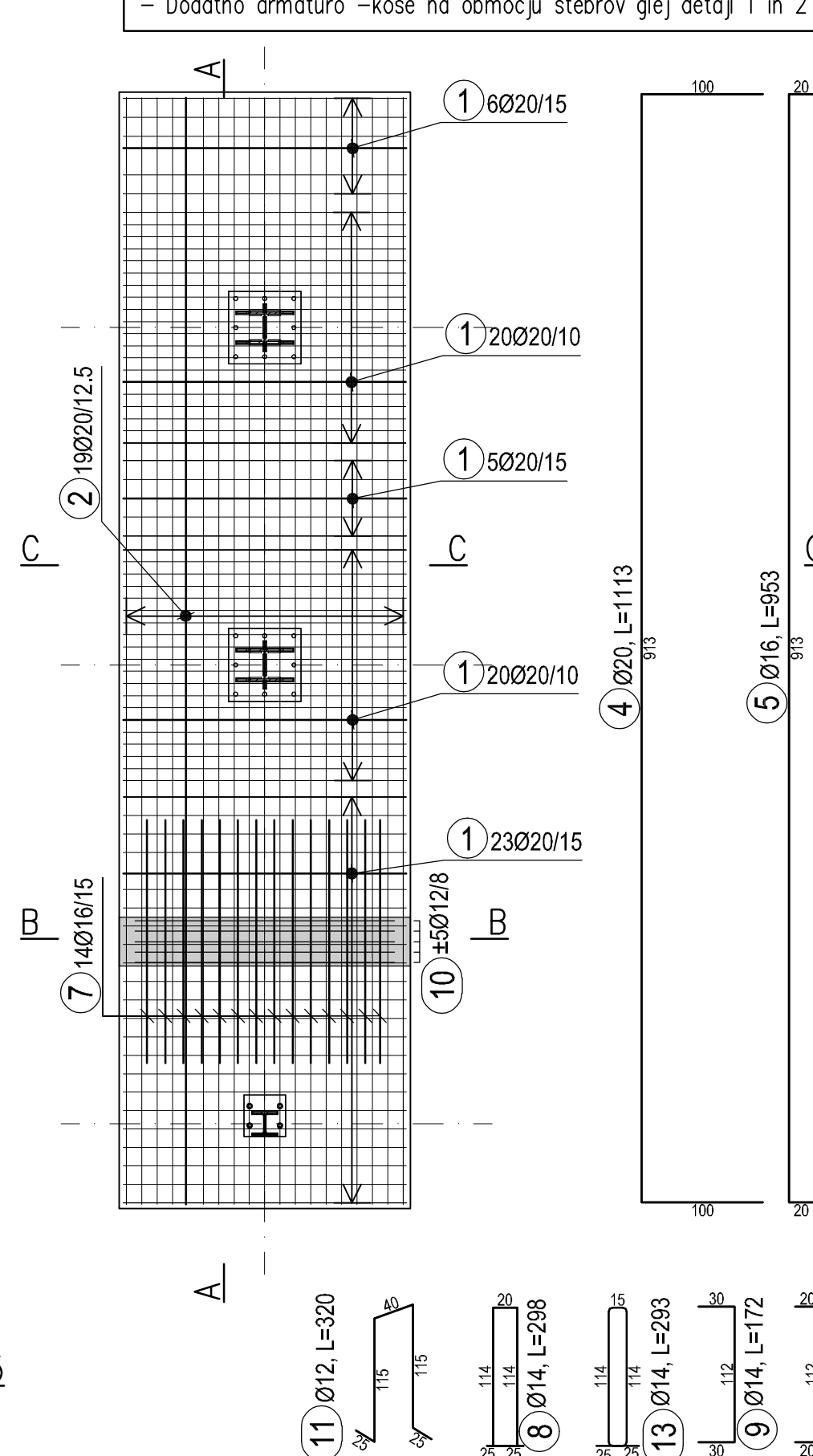
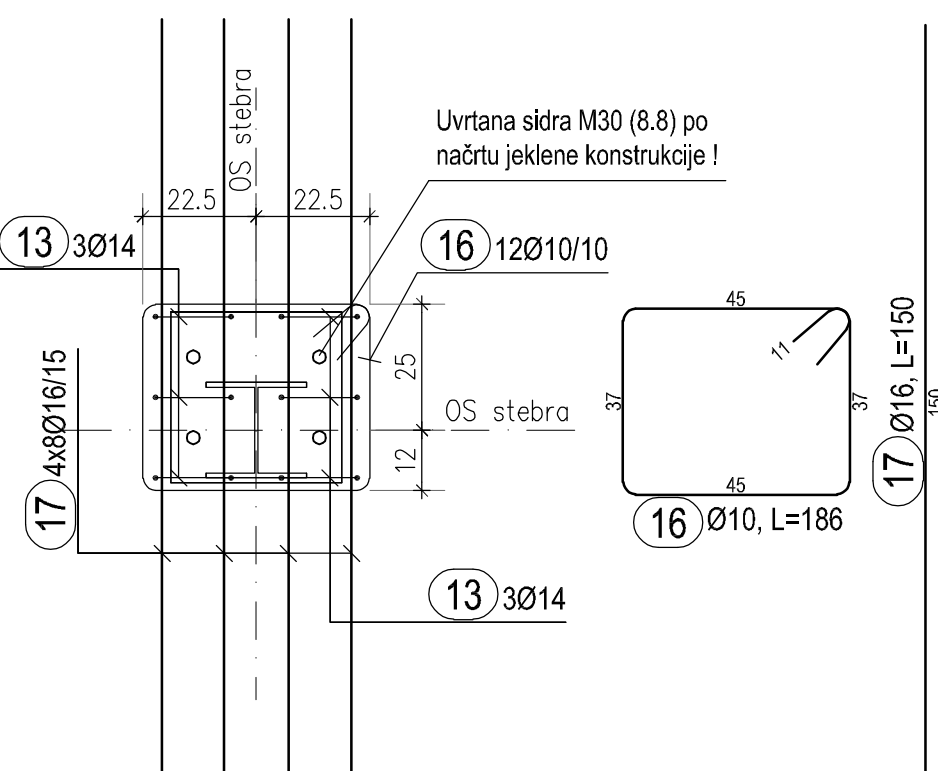


Sidrni koš pod stebrom M 1:15
Detajl 1 (S1,S2)

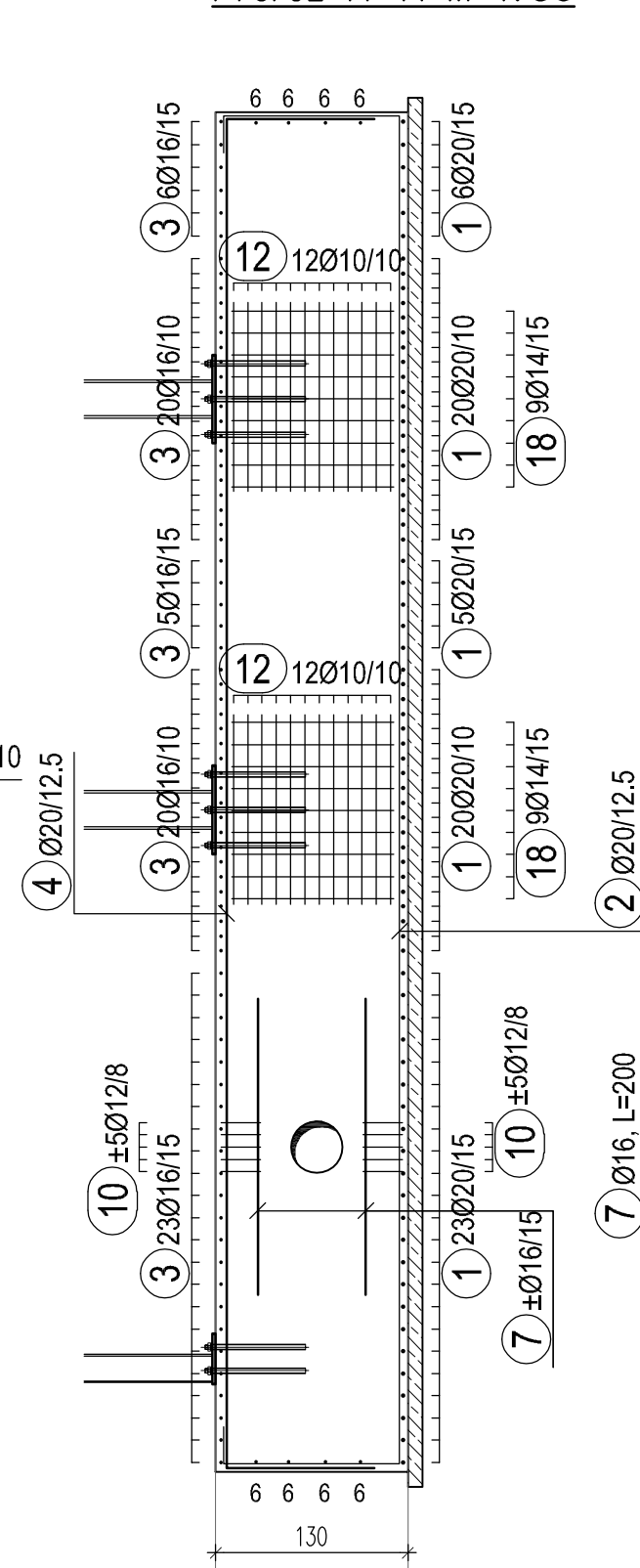


Armaturne koše je potrebno locirati točno na mestih predvidenih sider za jeklen steber !

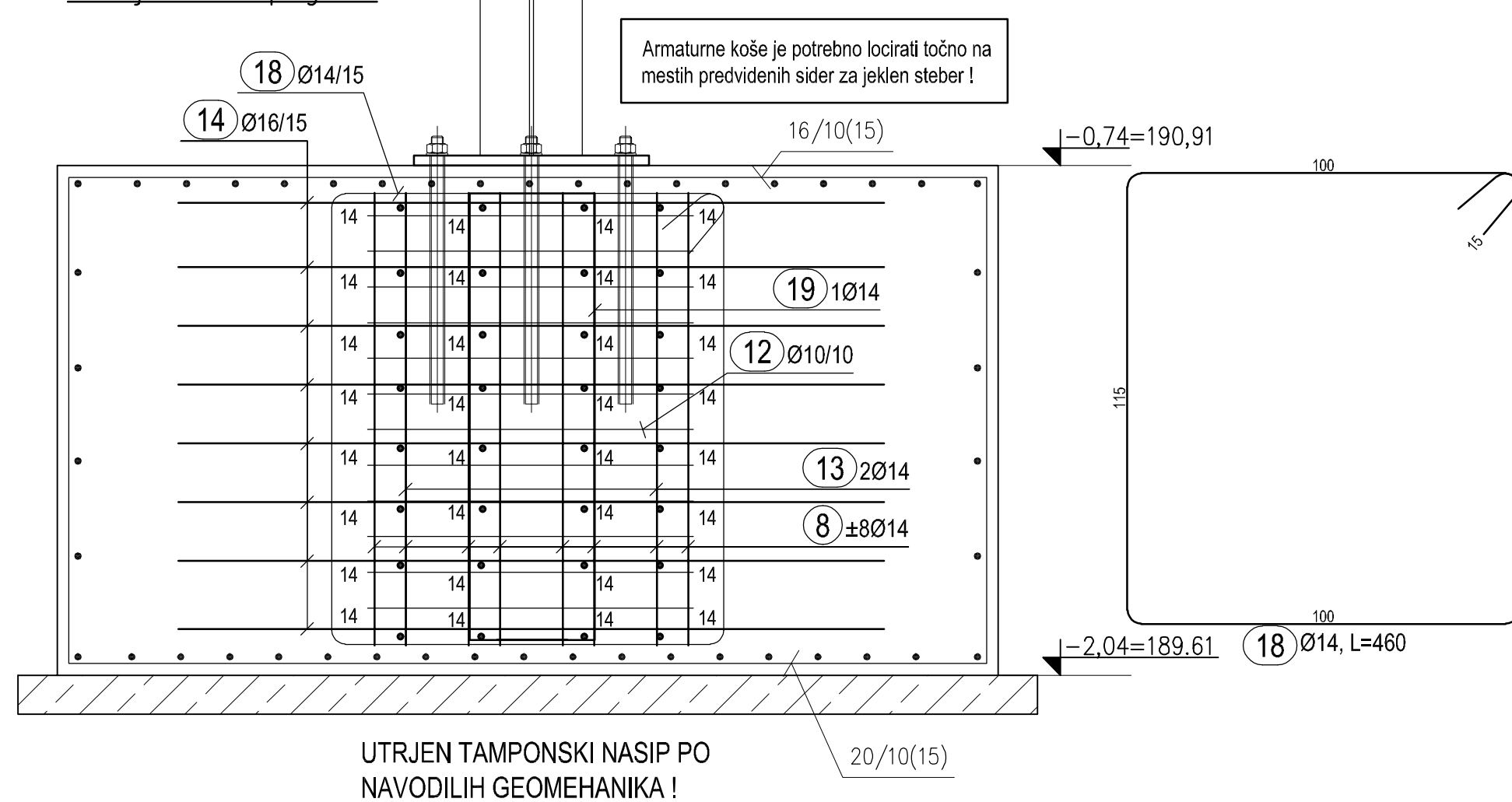
Sidrni koš pod stebrom M 1:15
Detajl 2 (S3)



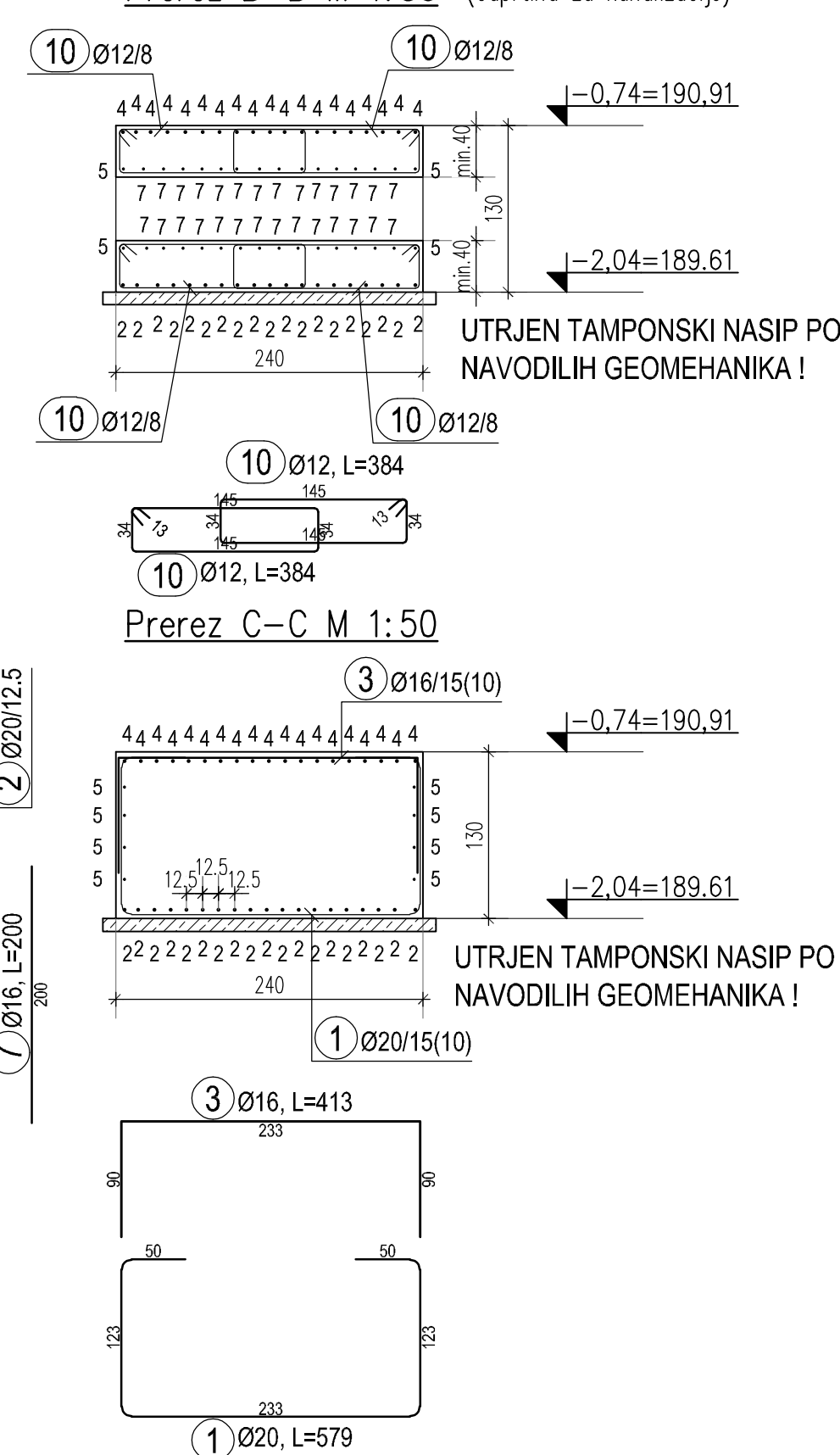
Prerez A-A M 1:50



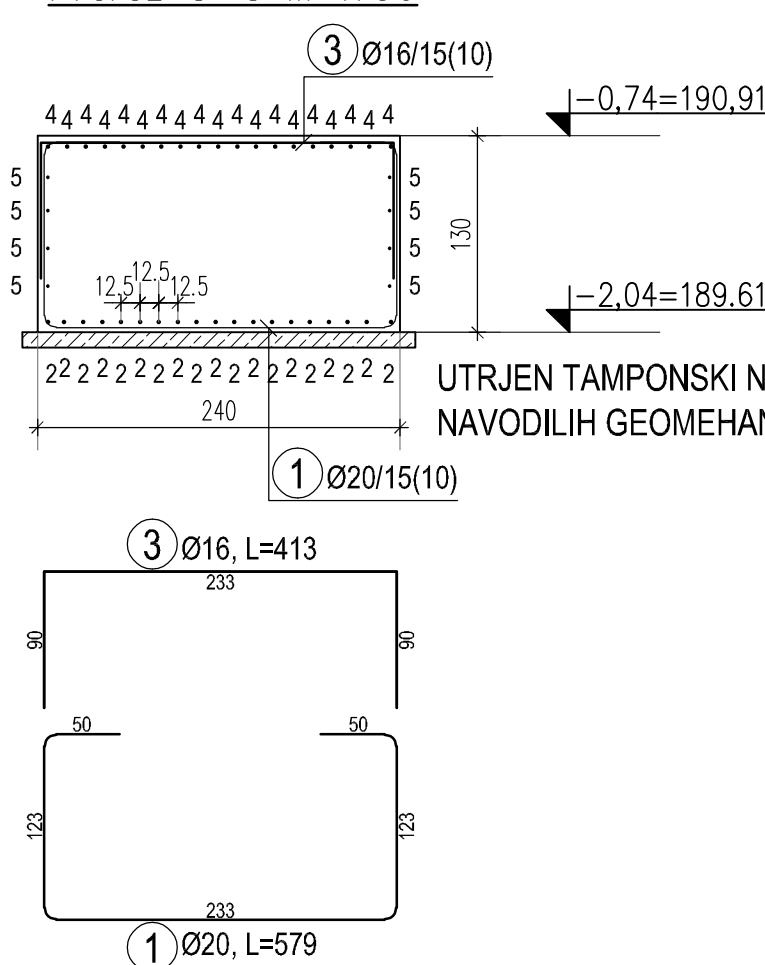
Sidrni koš pod stebrom M 1:15
Detalj 1 – v pogledu



Prerez B-B M 1:50 (odprtina za kanalizacijo)



Prerez C-C M 1:50



pozicija: POZ-T4

element:	AB točkovni temelj; kos: 1
----------	----------------------------

ZAHTEVE PRI GRADNJI:

- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnatega nasutja se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72-04/2025, april 2025)
- V primeru, da se pri izkopih ugotovijo bistvena odstopanja od Geo. poročila ali projekta je potrebno o tem obvestiti odg. projektanta !
- Pred izdelavo kamnatega nasutja je potrebno na dno izkopa položiti ločilni geosintetik.
- Izvedbo kamnatega nasutja mora nadzirati geomehanik !
- Sidra za jekleno konstrukcijo vgradijo skladno z načrtom jeklene konstrukcije (RAZPON d.o.o.).

Zaštitna plast betona: 30mm	
Kvaliteta jekla: S500-B	Kvaliteta betona: C25/30-XC2

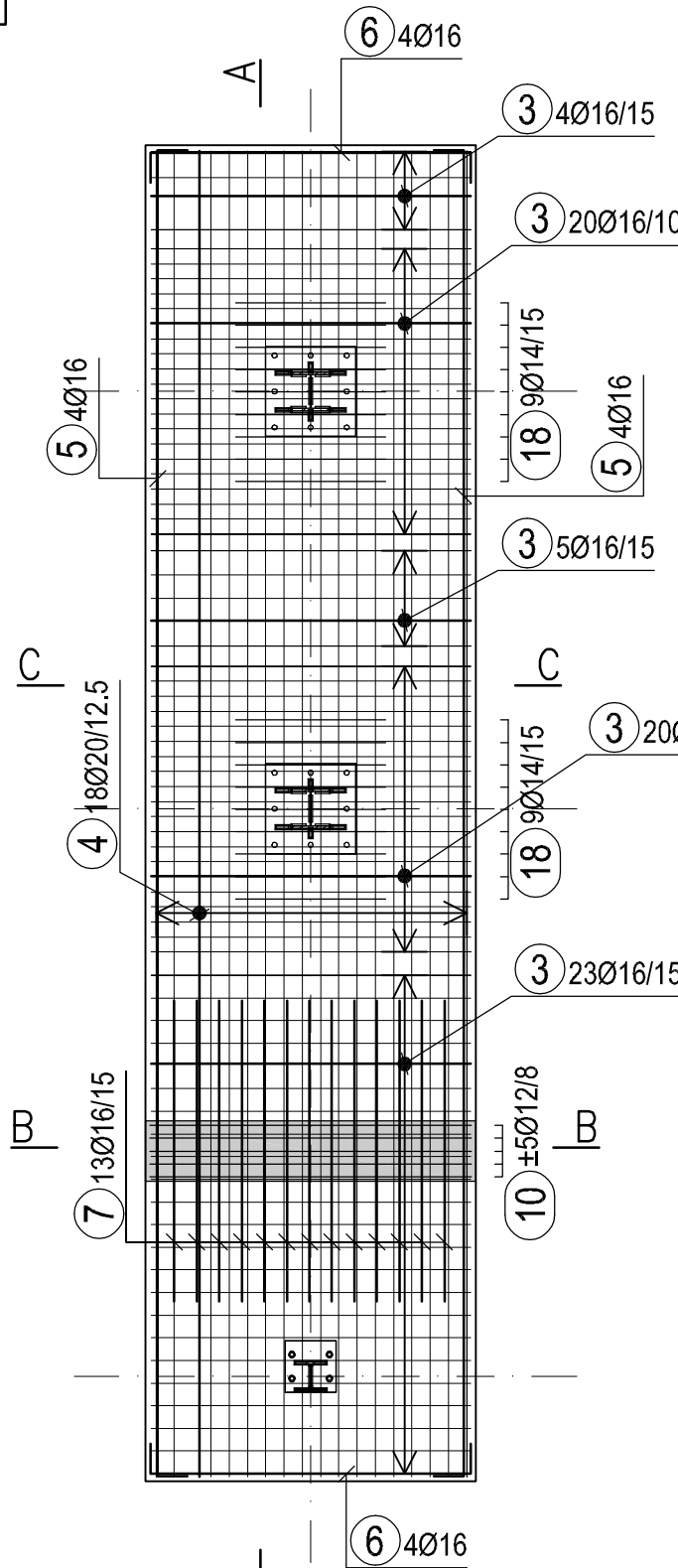
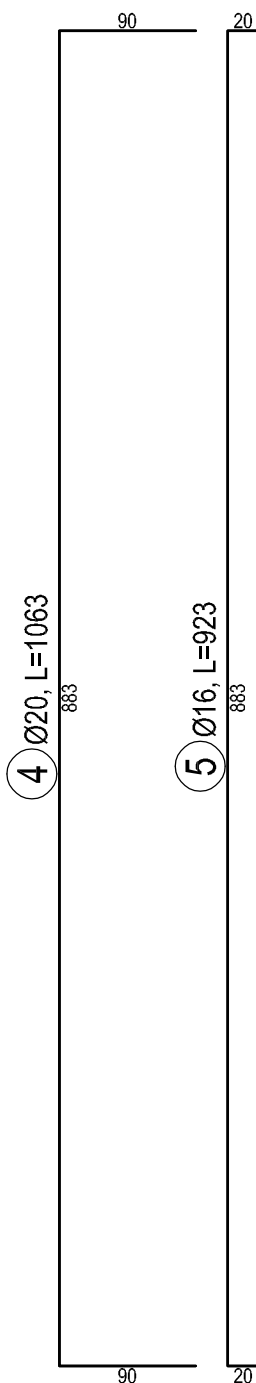
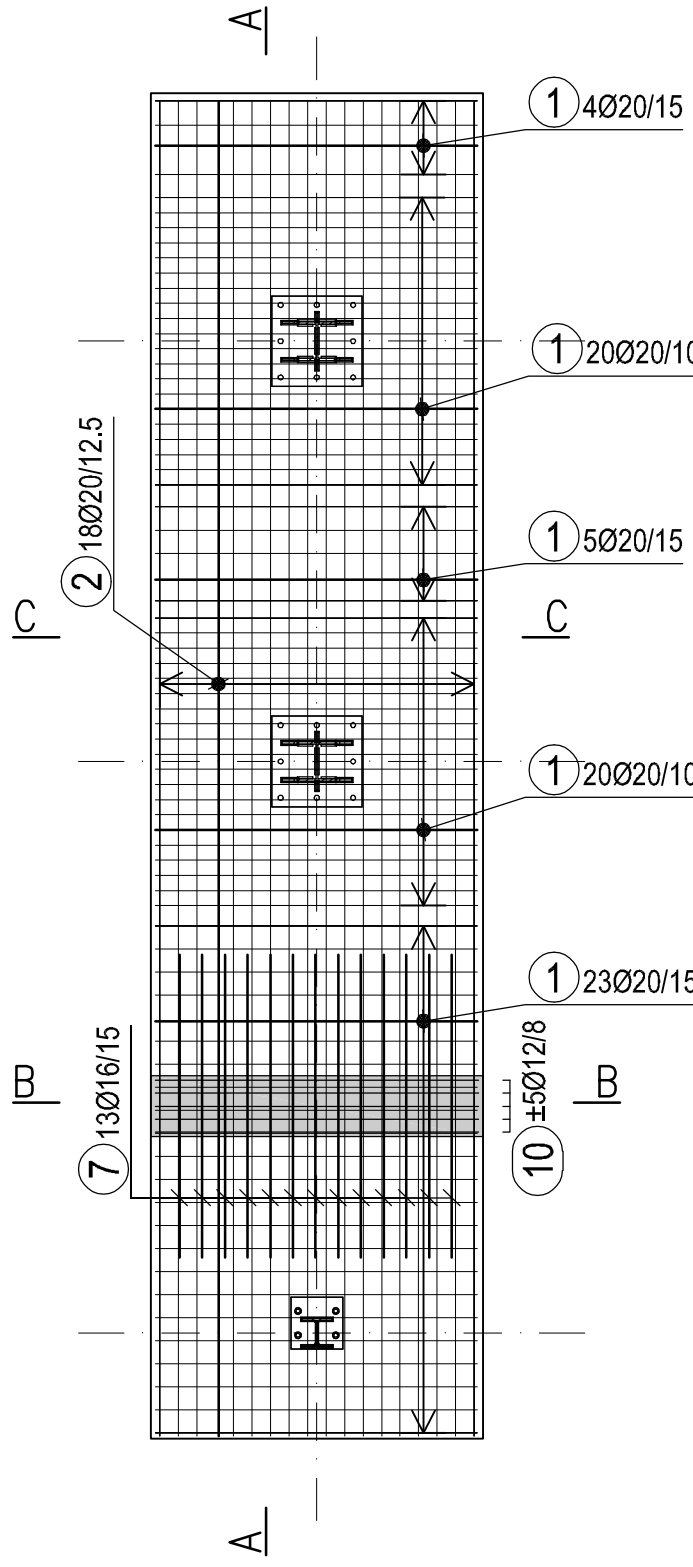
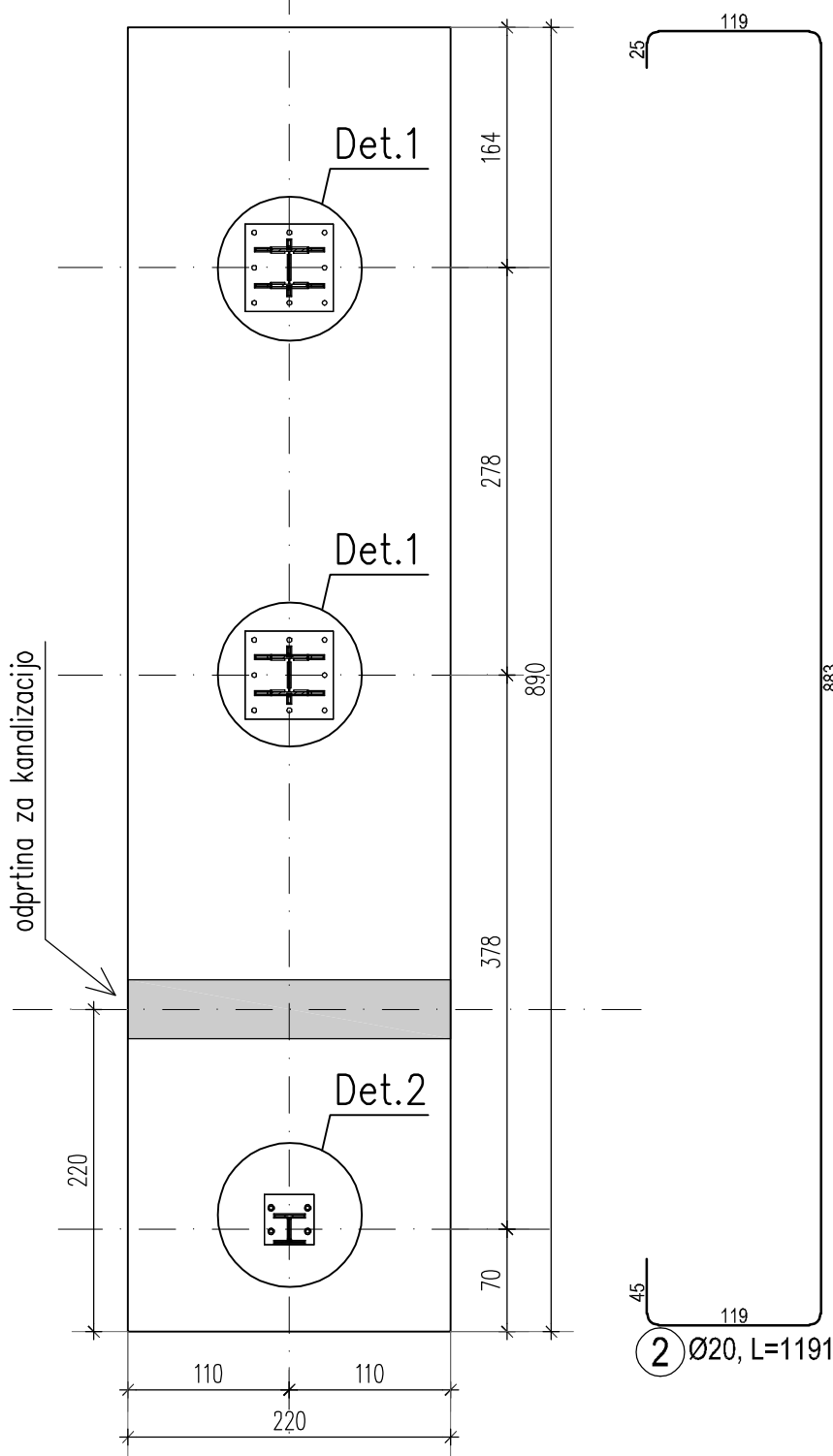
 karlovšek d.o.o. DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Škoka 7, 1230 Domžale, Slovenija tel: 051-618-1796, e-mail: Karlovsek7@skaln.net		- SINCE 1985 -	
		IZS 0763	
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.:	PZI
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.:	397/25
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta:	119/25
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebine risbe:	POZ-T4 AB TOČKOVNI TEMELJ, KOS: 1	1:50,15	3
		ident. št.:	datum
Vodja projektiranja:	ANDREJ KALAMAR udia	ZAPS	0091 A 25.7.2025
Poblaščen inženir:	GREGOR GREGORC udig		G-0493 25.7.2025
Sodelavec:	BLAŽ PERKO gt		25.7.2025

POZ-T5, kos: 3
TLORIS TEMELJA – DIMENZIJE

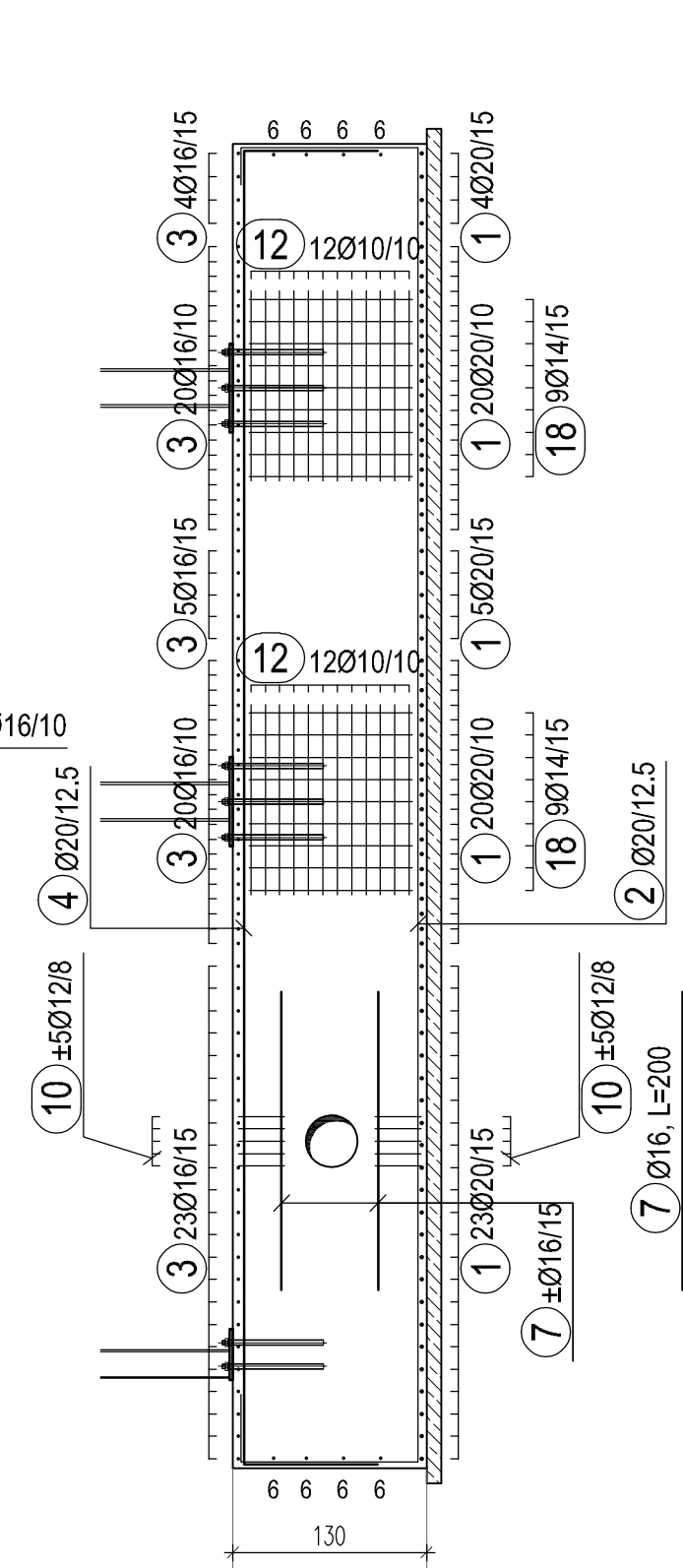
POZ-T5
TLORIS TEMELJA – ARMATURA SPODAJ M 1:50

POZ-T5
TLORIS TEMELJA – ARMATURA ZGORAJ M 1:50

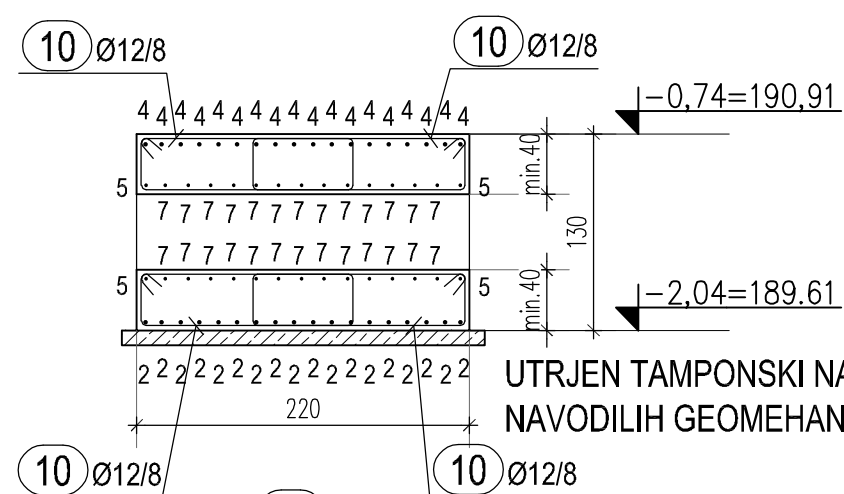
POZOR !
- Na območju sidranja jeklenih stebrov
je potrebno potek palic prilagoditi lokacij sider !
- Dodatno armaturo –koše na območju stebrov glej detajl 1 in 2 !



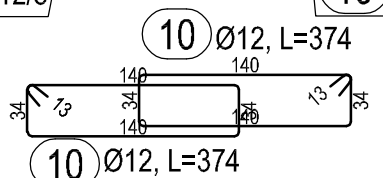
Prerez A-A M 1:50



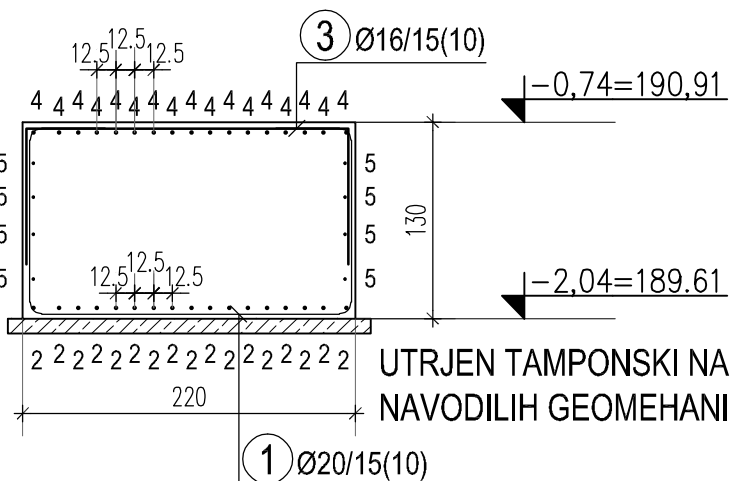
Prerez B-B M 1:50 (odprtina za kanalizacijo)



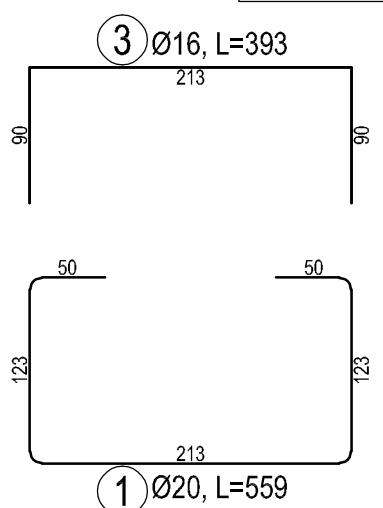
UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !



Prerez C-C M 1:50

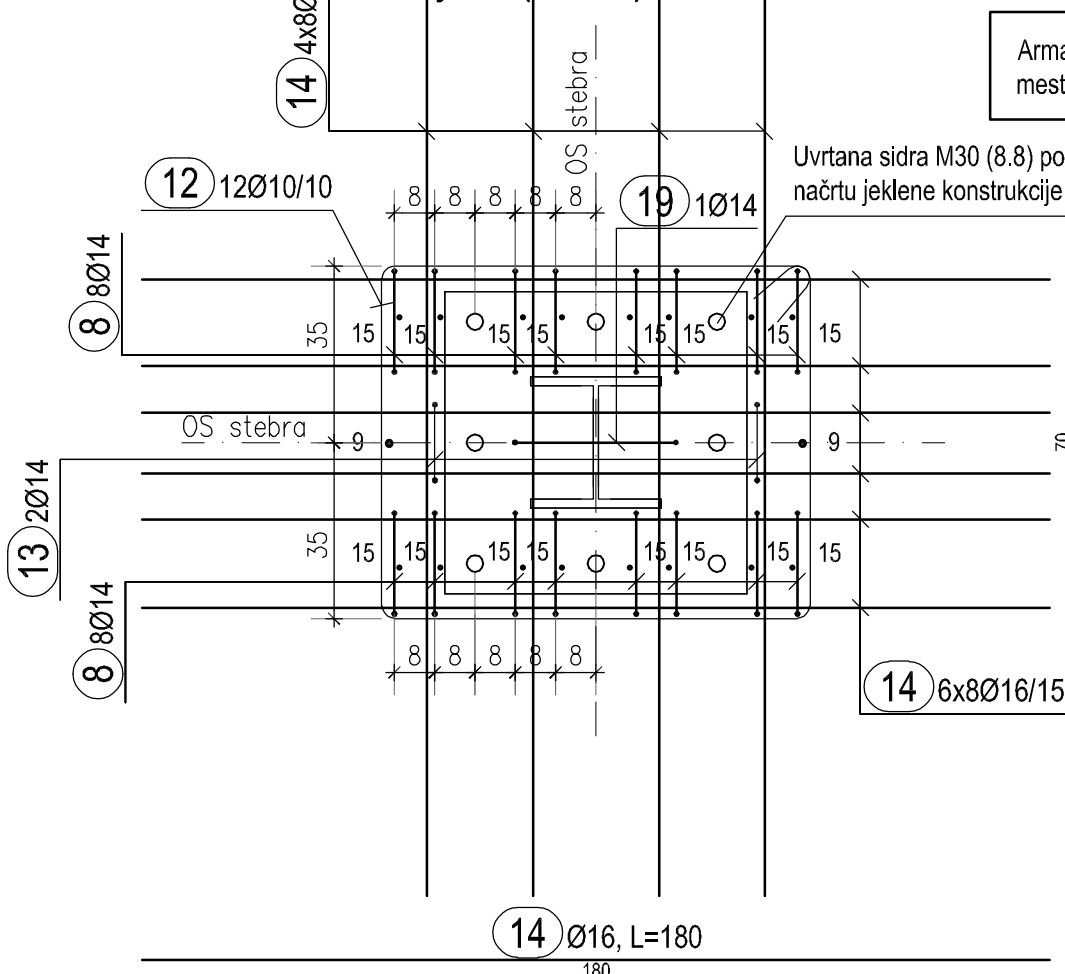


UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !



Sidrni koš pod stebrom M 1:15

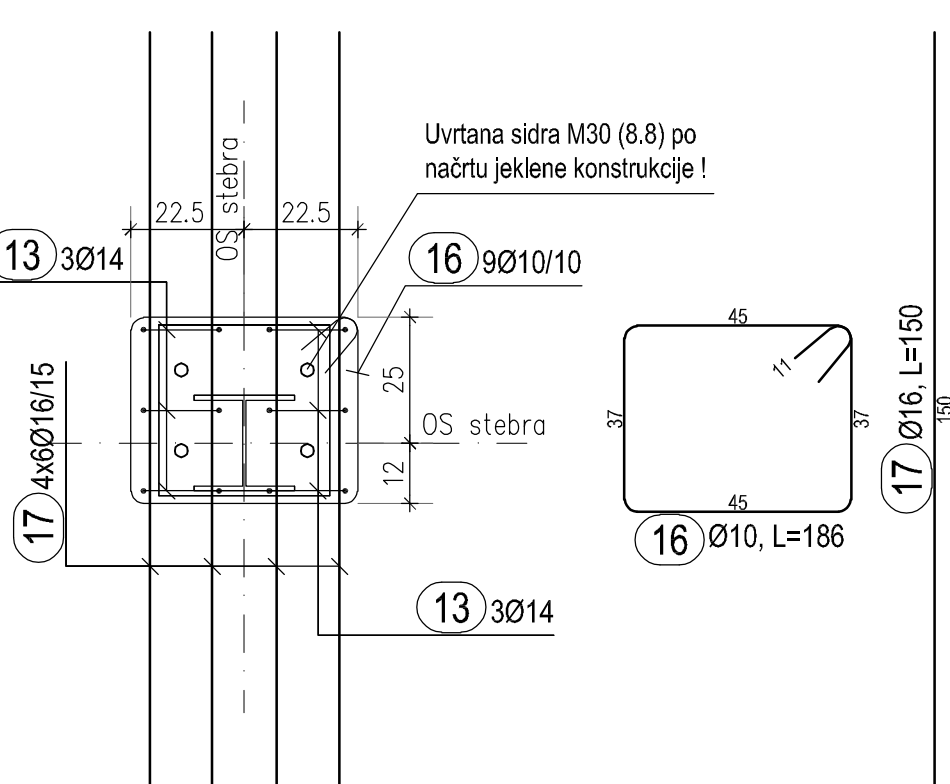
Detajl 1 (S1,S2)



Armaturne koše je potrebno locirati točno na
mestih predvidenih sider za jeklen steber !

Sidrni koš pod stebrom M 1:15

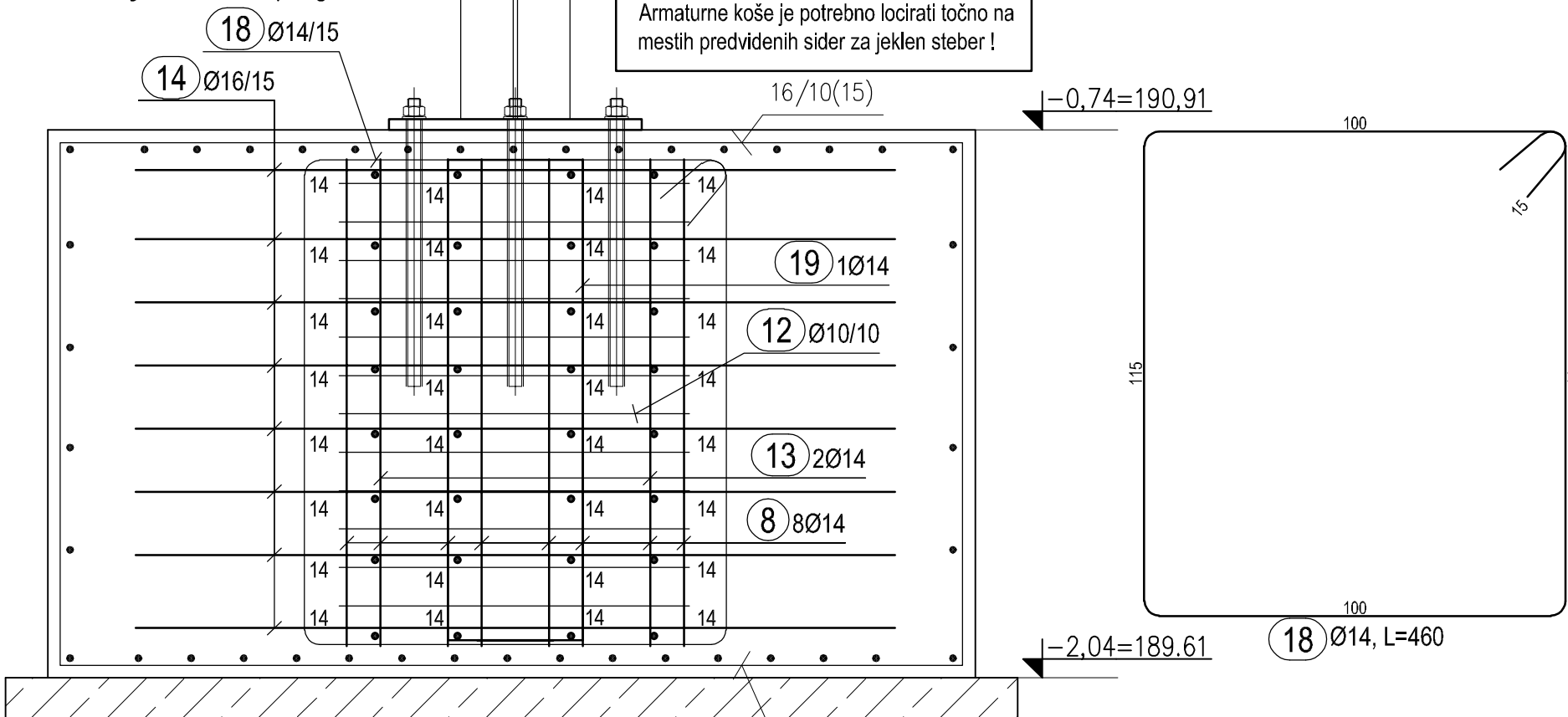
Detajl 2 (S3)



Uvrtana sidra M30 (8.8) po
načrtu jeklene konstrukcije !

Sidrni koš pod stebrom M 1:15

Detajl 1 – v pogledu



Armaturne koše je potrebno locirati točno na
mestih predvidenih sider za jeklen steber !

UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !

pozicija: POZ-T5

element: AB točkovni temelj, kos: 3

ZAHTEVE PRI GRADNJI:

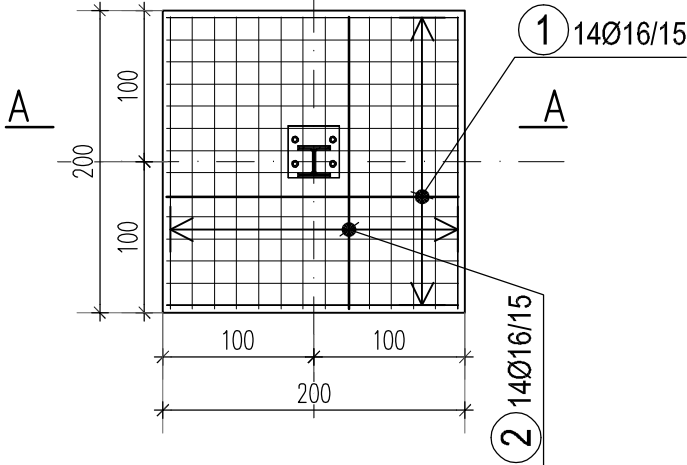
- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnitega nasutje se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72-04/2025, april 2025 !
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- Sidra za jekleno konstrukcijo vgraditi skladno z načrtom jeklene konstrukcije (RAZPON d.o.o.).

Zaščitna plast betona:	30mm
Kvaliteta jekla:	S500-B
Kvaliteta betona:	C25/30-XC2

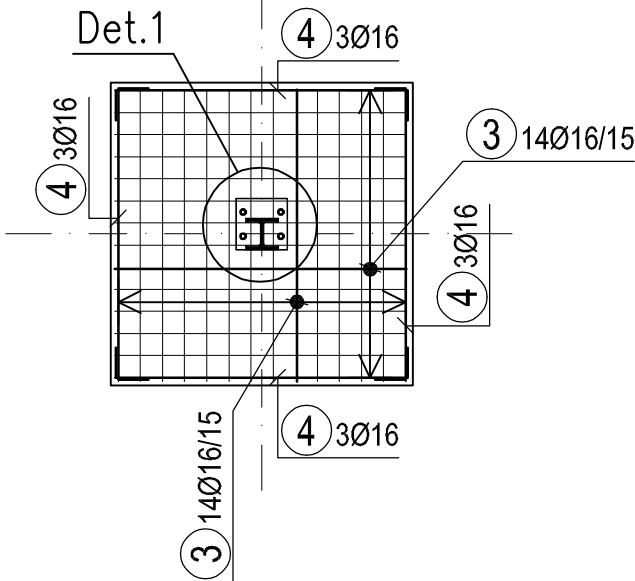
karlovšek d.o.o. - SINCE 1985 -	
DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Skoka 7, 1230 Domžale, Slovenija tel: 051-618-796, e-mail: Karlovsek7@siol.net	
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.
Objekt:	STADION FAZANERIJA MURSKA SOBOTA
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA
Vsebina risbe:	POZ-T5 AB TOČKOVNI TEMELJ, KOS: 3
Vodja projektiranja:	ANDREJ KALAMAR udia
Pooblaščen inženir:	GREGOR GREGORC udig
Sodelavec:	BLAŽ PERKO gt
vrsta proj.:	PZI
št. proj.:	397/25
št. načrta:	119/25
merilo:	1:50,15
ident. št.:	0091 A
datum:	25.7.2025
datum:	25.7.2025
datum:	25.7.2025

POZ-T2, kos: 1
TLORIS TEMELJA – ARMATURA SPODAJ M 1:50

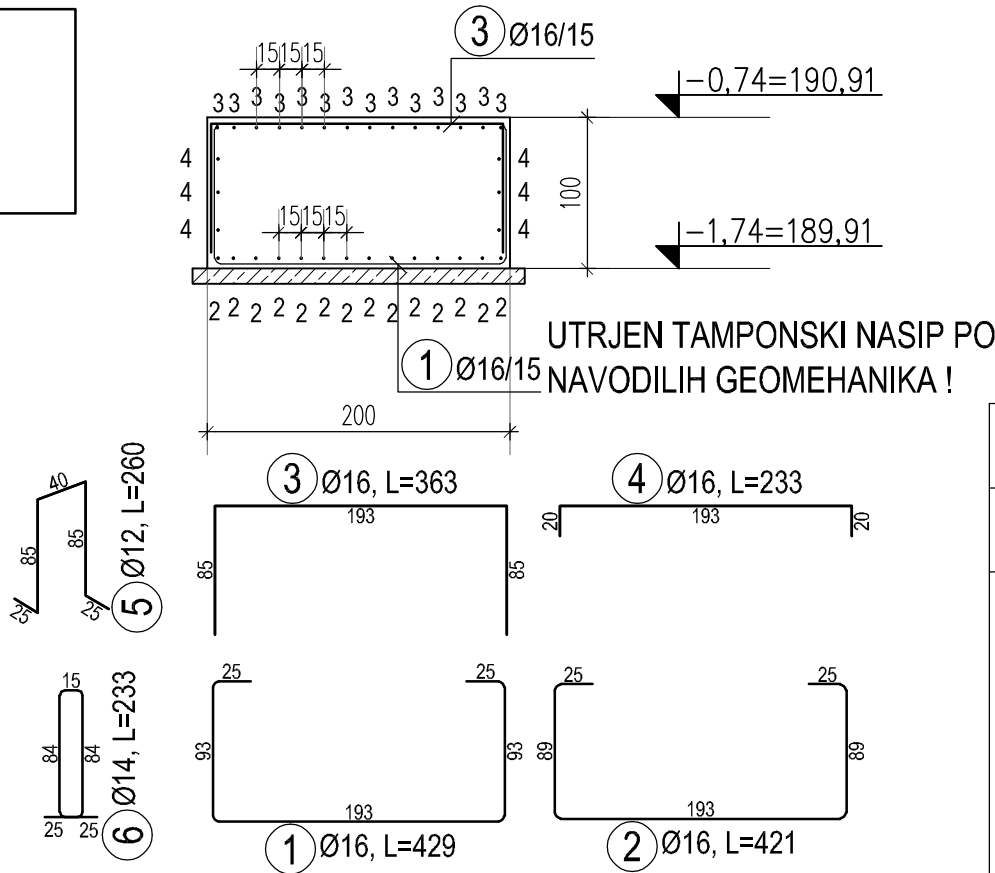
POZOR !
- Na območju sidranja jeklenih stebrov
je potrebno potek palic prilagoditi lokacij sider !
- Dodatno armaturo –koš na območju stebra glej detajl 1 !



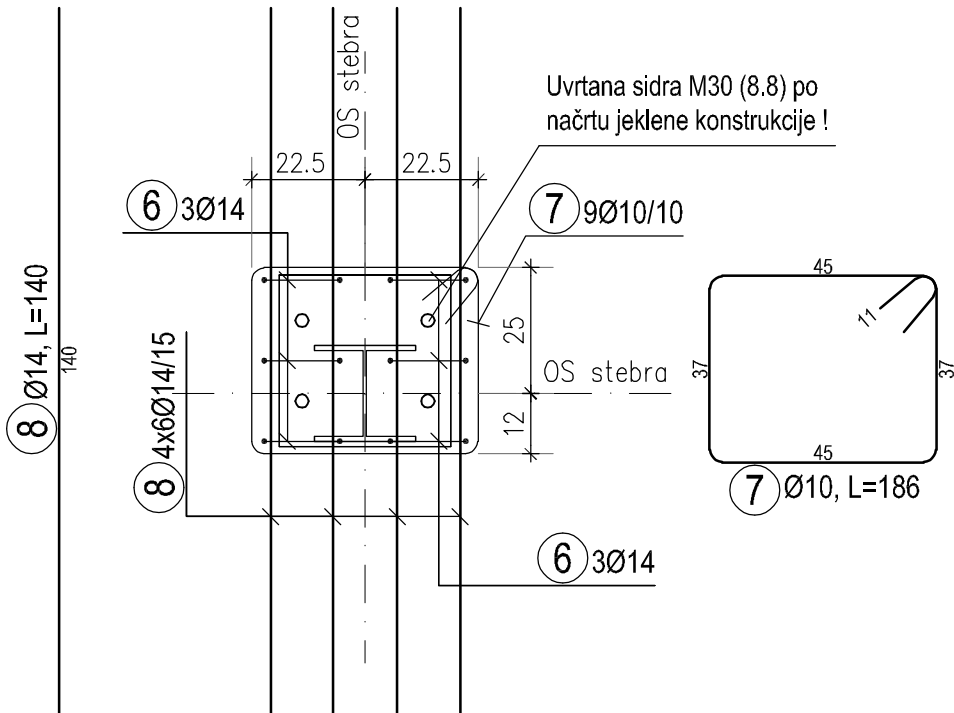
POZ-T2
TLORIS TEMELJA – ARMATURA ZGORAJ M 1:50



Prerez A-A M 1:50



Sidrni koš pod stebrom M 1:15
Detajl 1 (S3)



pozicija: POZ-T2

element: AB točkovni temelj, kos: 1

ZAHTEV PRI GRADNJI:

- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnitega nasutja se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72-04/2025, april 2025 !
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- Izvedbo kamnitega nasutja mora nadzirati geomehanik !
- Sidra za jekleno konstrukcijo vgraditi skladno z načrtom jeklene konstrukcije (RAZPON d.o.o.).

Zaščitna plast betona:

30mm

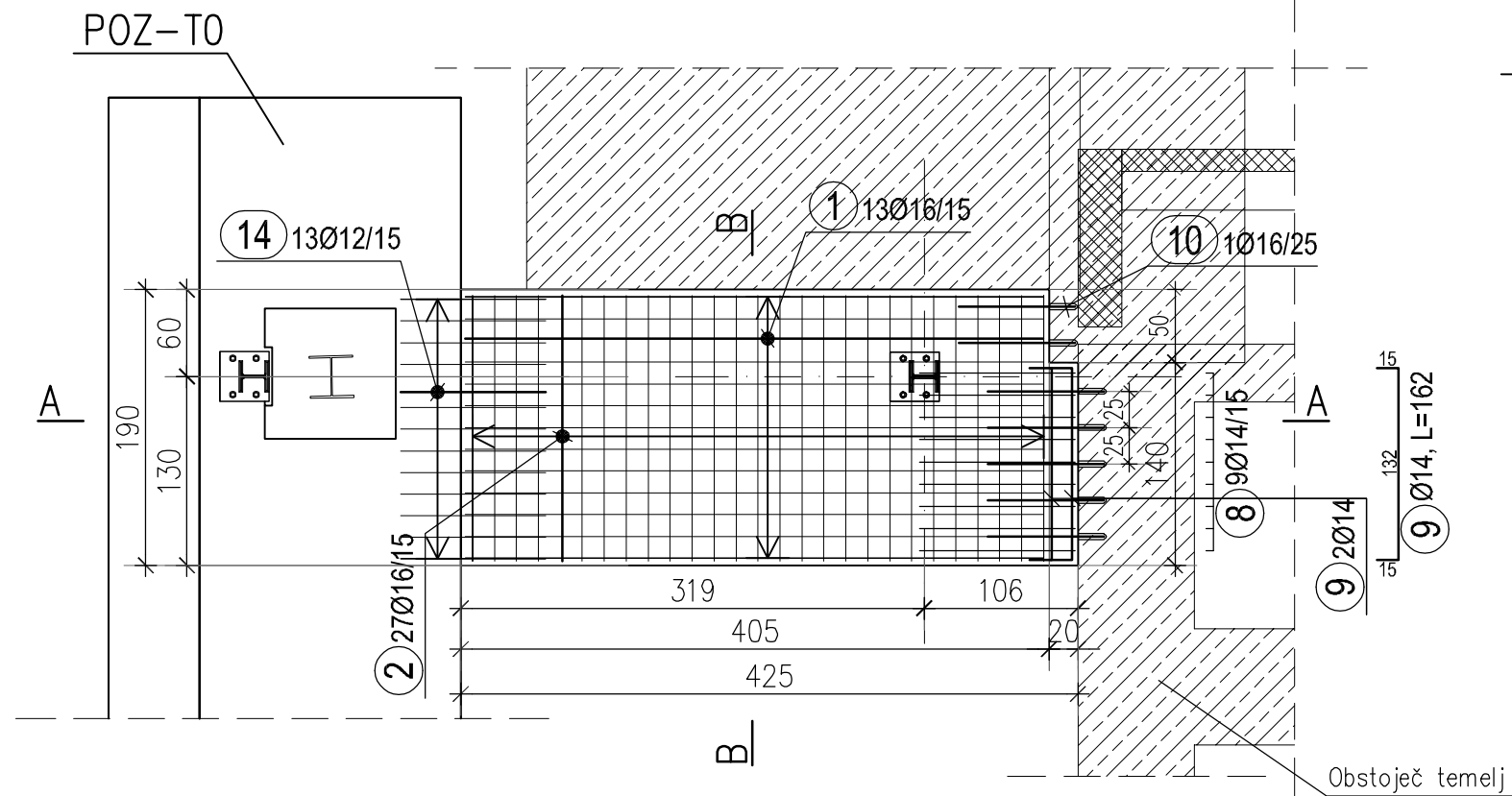
Kvaliteta jekla:
S500-B

Kvaliteta betona:
C25/30-XC2

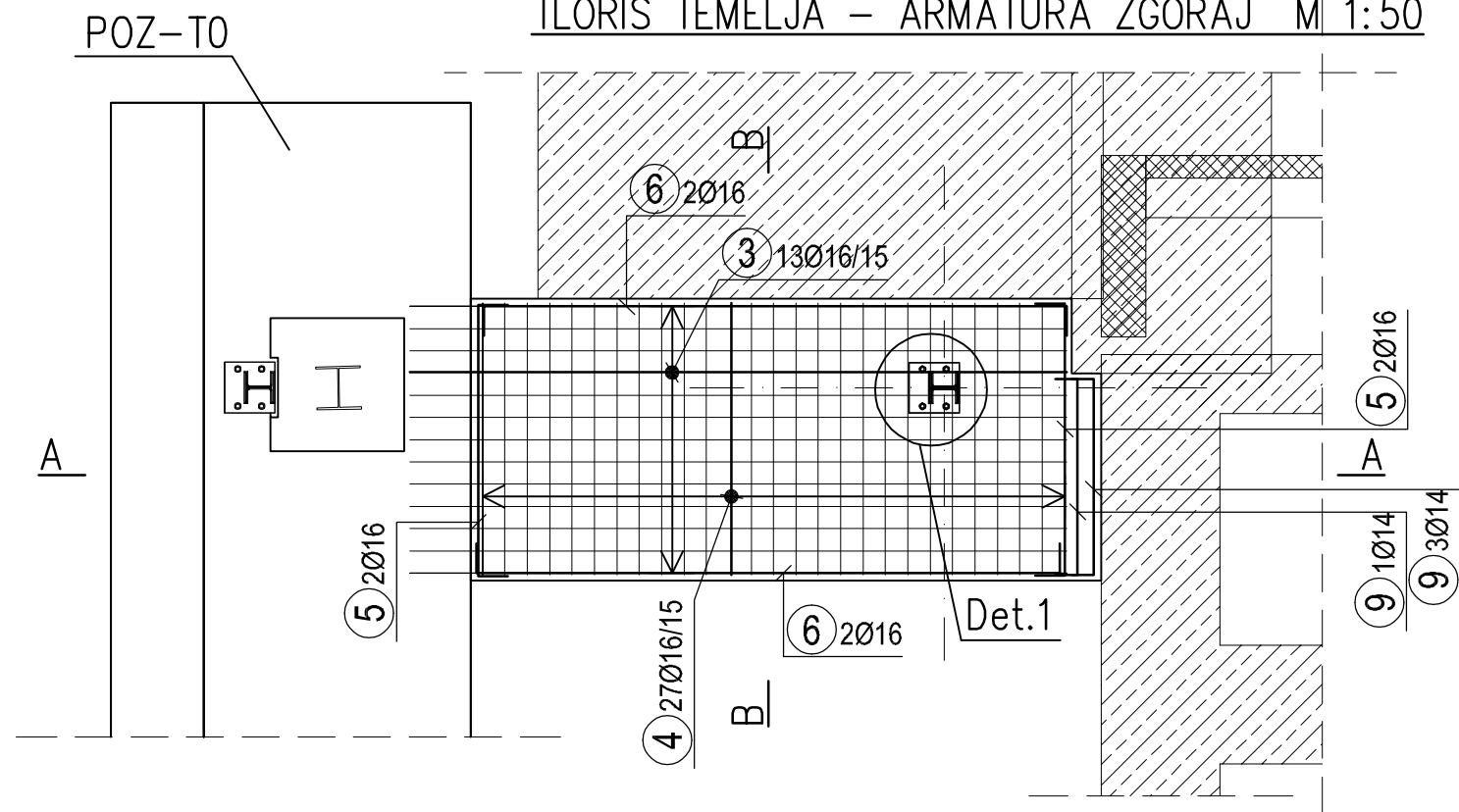
 karlovšek d.o.o. - SINCE 1985 -		IZS 0763	
DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Skoka 7, 1230 Domžale, Slovenija tel: 051-618-796, e-mail: Karlovsek7@siol.net			
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.:	PZI
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.:	397/25
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta.:	119/25
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebina risbe:	POZ-T2 AB TOČKOVNI TEMELJ, kos: 1	1:50,15	5
Vodja projektiranja: ANDREJ KALAMAR udia		ZAPS	
Pooblaščen inženir: GREGOR GREGORC udig		G-0493	
Sodelavec: BLAŽ PERKO gt			
		ident. št.:	datum
		0091 A	25.7.2025
			25.7.2025

POZ-T1
TŁORIS TEMELJA – ARMATURA SPODAJ M 1:50

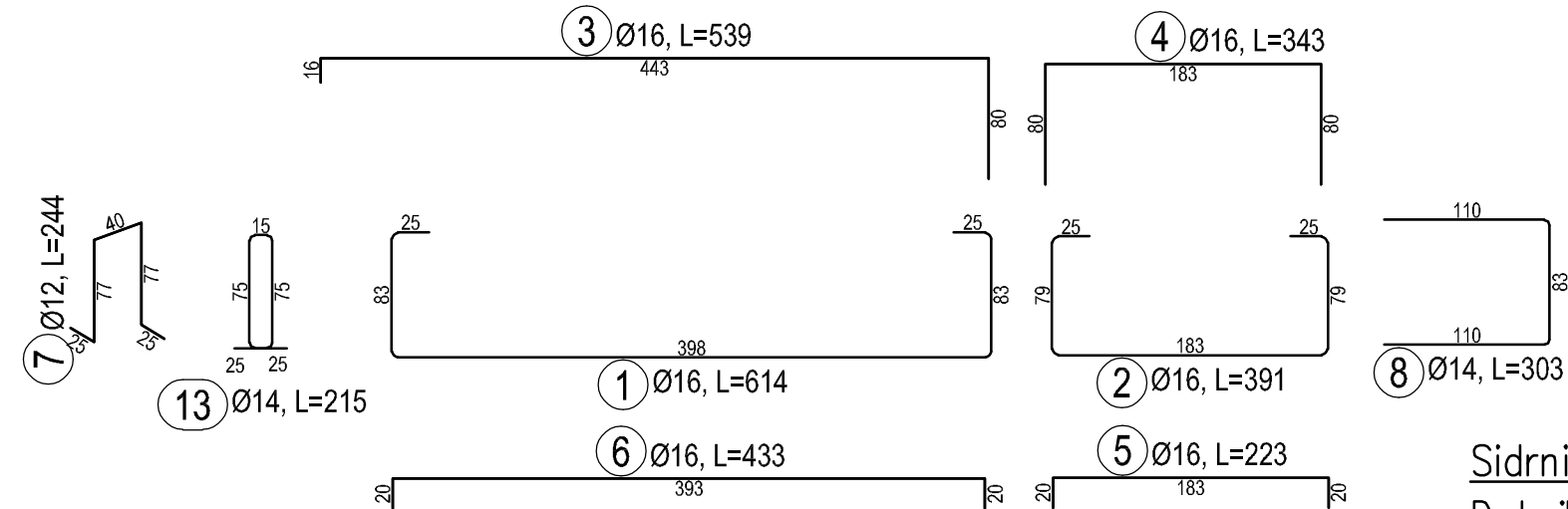
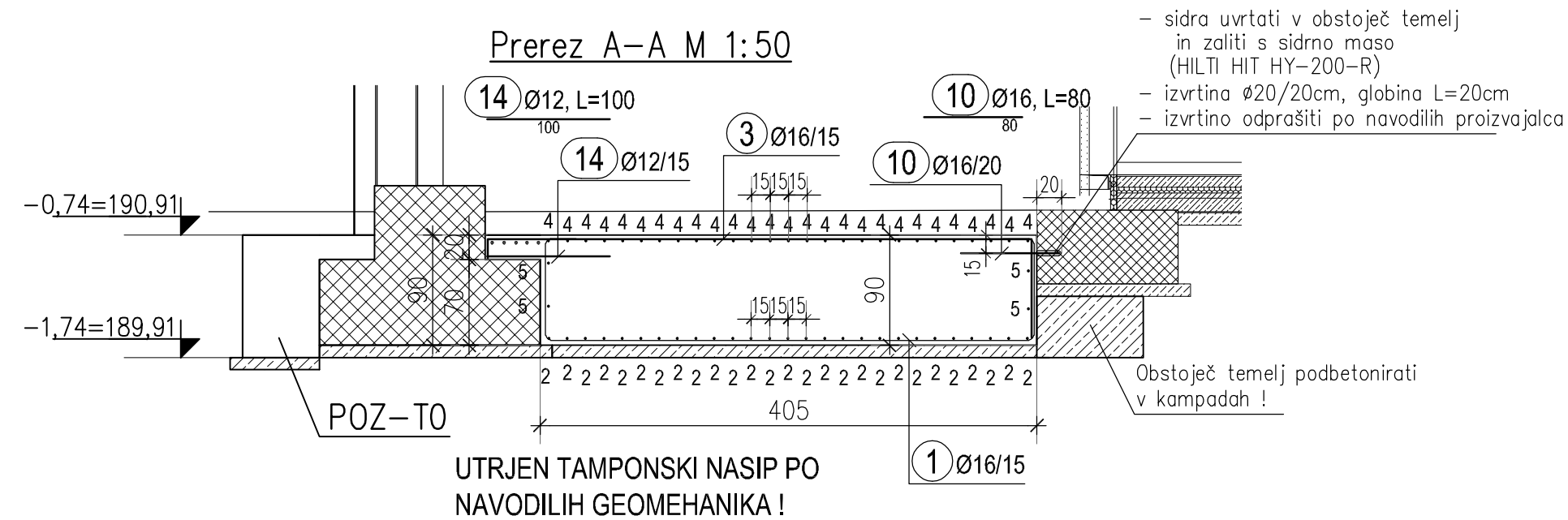
- Na območju sidranja jeklenih stebrov je potrebno potek palic prilagoditi lokacij sider !
- Dodatno armaturo –koš na območju stebra glej detajl 1 !



POZ-T1
TLORIS TEMELJA – ARMATURA ZGORAJ M 1:50

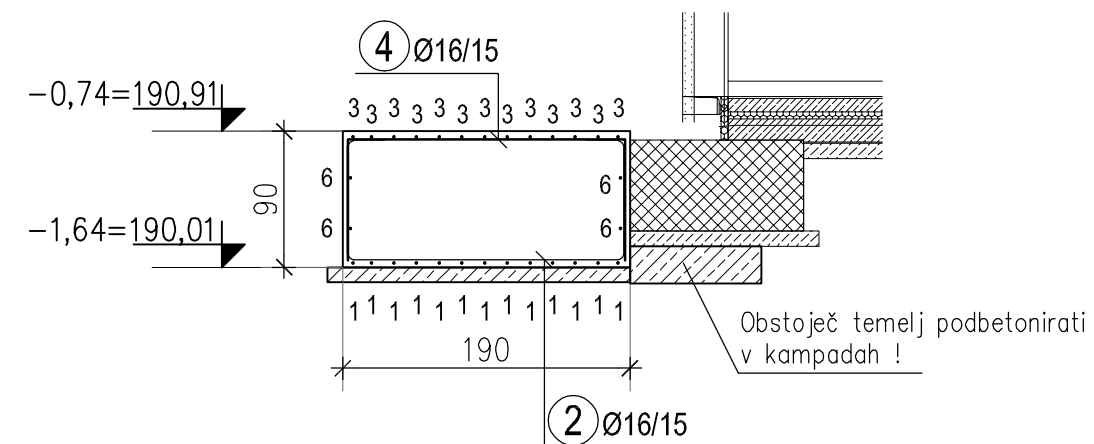


Prerez A-A M 1:50

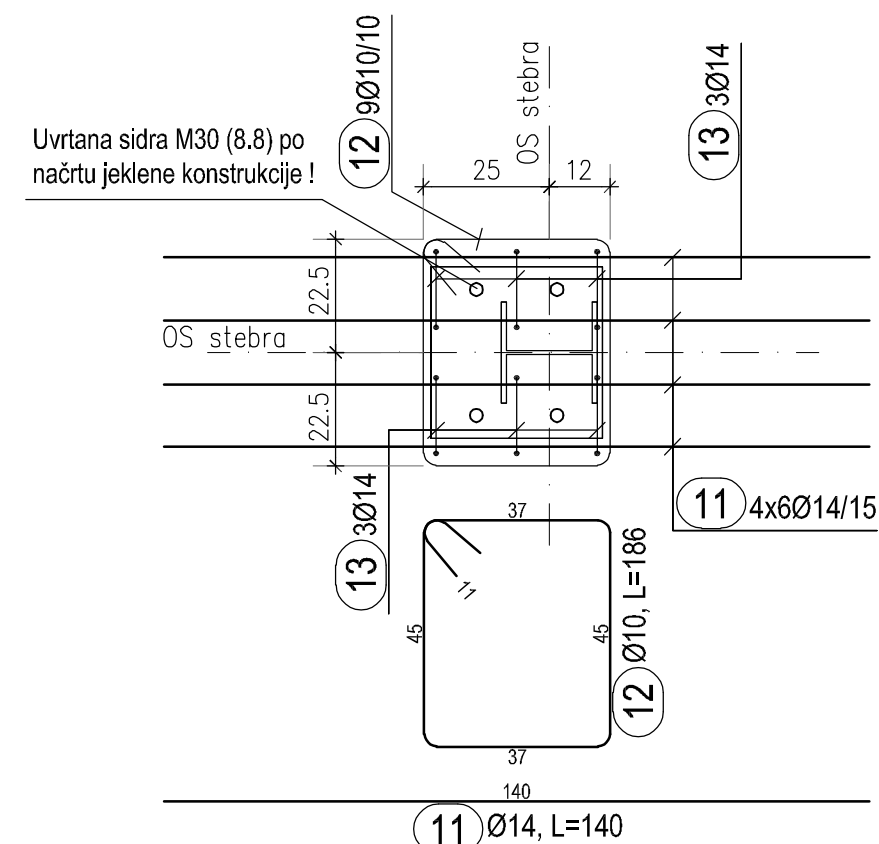


Sidrni koš pod stebrom M 1:15
Detajl 1 (S3)

Prerez B-B M 1:50



UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !



pozicija: POZ-T1

element: AB točkovni temelj, kos: 1

ZAHTEVE PRI GRADNJI:

- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnitega nasutja se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72–04/2025, april 2025 !
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- Pred izdelavo kamnitega nasutja je potrebno na dno izkopa položiti ločilni geosintetik.
- Izvedbo kamnitega nasutja mora nadzirati geomehanik !
- Sidra za jekleno konstrukcijo vgraditi skladno z načrtom jeklene konstrukcije (RAZPON d.o.o.).

Kvaliteta betona:
C25/30–XC2

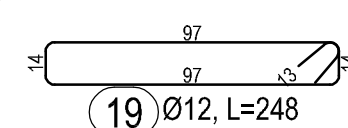
 karlovšek d.o.o. DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Škoka 7, 1230 Domžale, Slovenija tel: 051-618-796, e-mail: Karlovsek7@siol.net		- SINCE 1985 -	
		IZS 0763	
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.:	PZI
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.:	397/25
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta.:	119/25
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebina risbe:	POZ-T1 AB TOČKOVNI TEMELJ, kos: 1	1:50,15	6
		ident. št.:	datum
Vodja projektiranja:	ANDREJ KALAMAR udia	ZAPS	0091 A
Pooblaščen inženir:	GREGOR GREGORC udig	G-0493	28.7.2025
Sodelavec:	BLAŽ PERKO gt		28.7.2025

NAHRAPAVITI (poškoditi) cca. 5mm v globino
očistiti z vodnim curkom in premazati z
emulzijo (staro-novo) npr. Kemalutex



– sidra uvrstati v obstoječ temelj
 in zaliti s sidrno maso
 (HILTI HIT HY-200-R)
 – izvrtina Ø20/25cm, globina L=50cm
 – izvrtina odprášiti po navodilih proizvajalca

UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !



- sidra uvrtni v obstoječ temelj
in zaliti s sidrno maso
(HILTI HIT HY-200-R)

- izvrtina Ø18/20cm, globina L=15cm

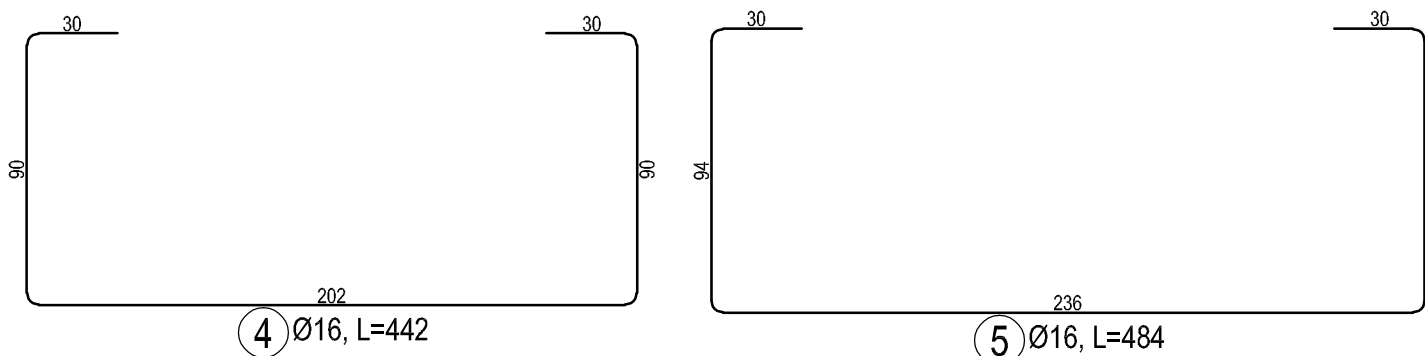
- izvrtino odprašiti po navodilih proizvajalca

UTRJEN TAMPONSKI NASIP PO NAVODILIH GEOMEHANIKA !

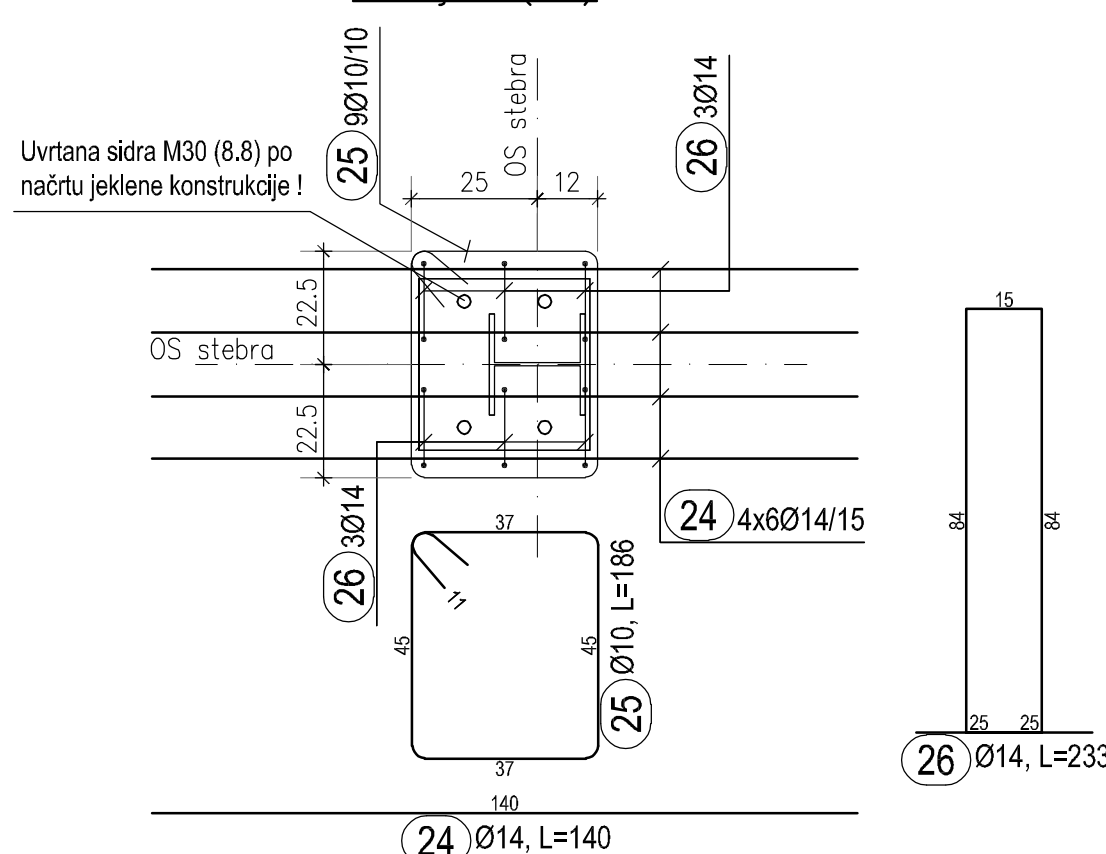
⑧ Ø20, L=160

- sidra uvrtni v obstoječ temelj in zaliti s sidrno maso (HILTI HIT HY-200-R)
- izvrtina Ø24/25cm, globina L=55cm
- izvrtino odprašiti po navodilih proizvajalca

UTRJEN TAMPONSKI NASIP PO
NAVODILIH GEOMEHANIKA !



Detajl 1 (S3)



- sidra uvrstati v obstoječ temelj
in zaliti s sidrno maso
(HILTI HIT HY-200-R)
- izvrtina $\varnothing 18/20\text{cm}$, globina $L=15\text{cm}$
- izvrtino odprášiti po navodilih proizvajalca

pozicija: POZ-T0

element: – AB točkovni temelj
– prerezi

ZAHTEV PRI GRADNJI:

- Izkop, pripravo temeljnih tal, sestavo, granulacijo, debelino in zbitost kamnitega nasutja se izvede po navodilih in zahtevah geomehanika (Geotehnično mnenje MBL inženiring d.o.o., Maribor, št.n.: 72–04/2025, april 2025).
- V primeru, da se pri izkopih ugotovijo bistvena odstopanja od Geo. poročila ali projekta je potrebno o tem obvestiti odg. projektanta !
- Pred izdelavo kamnitega nasutja je potrebno na dno izkopa položiti ločilni geosintetik.
- Izvedbo kamnitega nasutja mora nadzirati geomehanik !
- Stično površino nahrpaviti (poštokati) cca. 5mm v globino, očistiti z vodnim curkom, da se pokažejo zrna in premazati z emulzijo (staro–novo) npr. Kemalutex
- V temelj ni dovoljena izvedba prebojev za instalacije !
- Pri vrtanju v obstoječ temelj za sidra se obstoječa armatura ne sme poškodovati !
- Sidra za jekleno konstrukcijo vgraditi skladno z načrtom jeklene konstrukcije (RAZPON d.o.o.).

Zasčitna plast betona: 30mm	
Kvaliteta jekla: S500-B	Kvaliteta betona: C25/30-XC2

 karlovšek d.o.o. DRUŽBA ZA PROJEKTIRANJE IN INŽENIRING Antona Skoka 7, 1230 Domžale, Slovenija tel: 051-618-796, e-mail: Karlovsek7@siol.net		- SINCE 1985 -	
		IZS 0763	
Investitor:	MO MURSKA SOBOTA Kardoševa ul. 2, Murska Sobota	vrsta proj.:	PZI
Naročnik:	STUDIO KALAMAR d.o.o., Slovenska c. 19, Lj.	št. proj.:	397/25
Objekt:	STADION FAZANERIJA MURSKA SOBOTA	št. načrta.:	119/25
Vrsta načrta:	NAČRT S PODROČJA GRADBENIŠTVA	merilo	št. risbe
Vsebina risbe:	POZ – T0 AB TOČKOVNI TEMELJ PREREZI	1:33	8
		ident. št.:	datum
Vodja projektiranja:	ANDREJ KALAMAR udia ZAPS	0091 A	28.7.2025
Pooblaščen inženir:	GREGOR GREGORC udig	G-0493	28.7.2025
Sodelavec:	BLAŽ PERKO gt		28.7.2025

2.3.6	SKUPNI IZVLEČEK ARMATURE IN KOSOVNICA
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SKUPNI IZVLEČEK ARMATURE

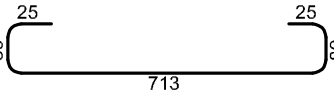
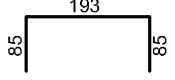
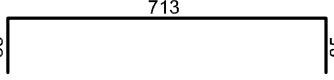
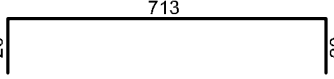
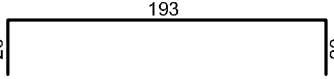
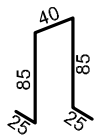
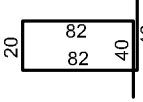
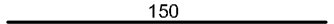
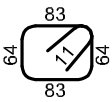
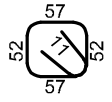
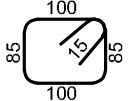
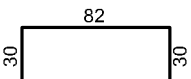
Palice do Ø 12 :	1260 kg
Palice nad Ø 12 :	23782 kg
Mrežna armatura (bruto količina):	0 kg
nepredvidena armatura 3%:	751 kg
Skupaj (gladka, rebrasta in mrežna armatura):	25793 kg

Opombe:

- Teže armaturnih palic lahko variirajo v odvisnosti od proizvajalca jekla.
- Teža armature v podložnih betonih in estrihih ni zajeta !
- Obračun po dejansko vgrajenih količinah.

IZVLEČEK ZA LIST ŠT.: 1

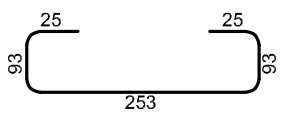
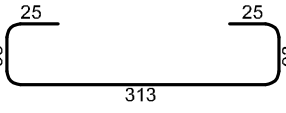
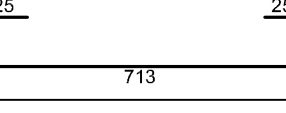
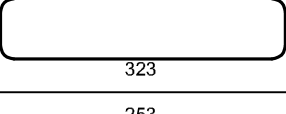
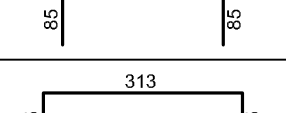
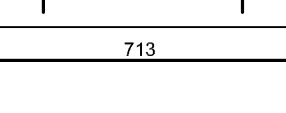
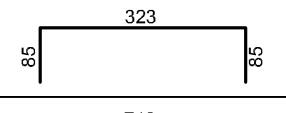
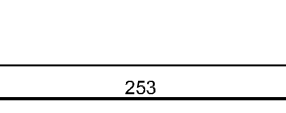
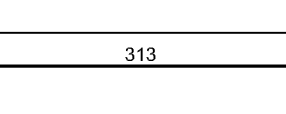
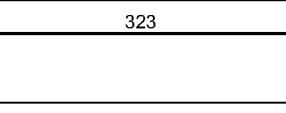
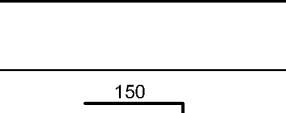
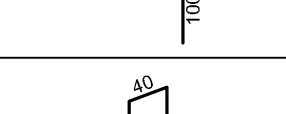
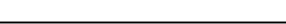
Palice - specifikacija

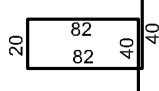
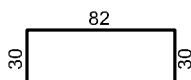
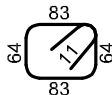
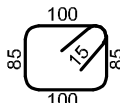
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POZ-T3A (3 kos)					
1		16	429.00	171	733.59
2		16	941.00	48	451.68
3		16	363.00	171	620.73
4		16	883.00	42	370.86
5		16	753.00	18	135.54
6		16	233.00	18	41.94
7	 3D geometrija	12	260.00	48	124.80
8		14	264.00	60	158.40
9		16	150.00	306	459.00
10		10	316.00	27	85.32
11		10	240.00	30	72.00
12		14	400.00	39	156.00
13		14	142.00	24	34.08

IZVLEČEK ZA LIST ŠT.: 1			
Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500, Ø ≤ 12 mm			
10	157.32	0.65	102.10
12	124.80	0.92	114.82
Skupaj (S500, Ø ≤ 12 mm)			216.92
S500, Ø > 12 mm			
14	348.48	1.25	436.30
16	2813.34	1.64	4608.25
Skupaj (S500, Ø > 12 mm)			5044.55
Skupaj			5261.46

IZVLEČEK ZA LIST ŠT.: 2

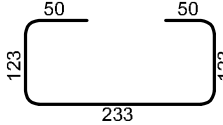
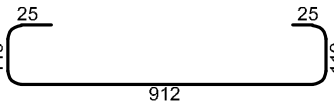
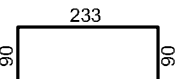
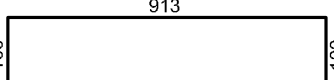
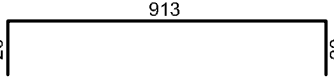
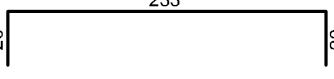
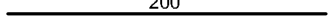
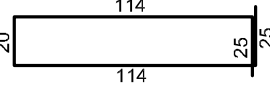
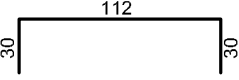
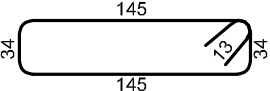
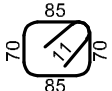
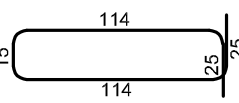
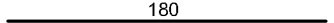
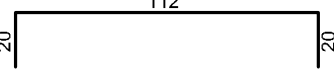
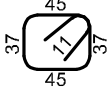
Palice - specifikacija

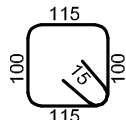
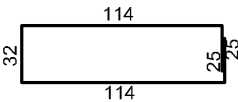
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POZ-T3B (1 kos)					
1		16	489.00	30	146.70
2		16	549.00	27	148.23
3		16	941.00	21	197.61
4		16	551.00	5	27.55
5		16	423.00	30	126.90
6		16	483.00	27	130.41
7		16	883.00	18	158.94
8		16	493.00	4	19.72
9		16	753.00	3	22.59
10		16	293.00	3	8.79
11		16	353.00	3	10.59
12		16	363.00	3	10.89
13		16	490.00	3	14.70
14		16	250.00	3	7.50
15	 3D geometrija	12	260.00	22	57.20

IZVLEČEK ZA LIST ŠT.: 2					
16		14	264.00	20	52.80
17		16	150.00	102	153.00
18		14	142.00	8	11.36
19		10	316.00	9	28.44
20		10	240.00	10	24.00
21		14	400.00	13	52.00
Palice - izvleček					
Ø [mm]	lg [m]	Teža enote [kg/m']		Teža [kg]	
S500, Ø ≤ 12 mm					
10	52.44	0.65	34.03		
12	57.20	0.92	52.62		
Skupaj (S500, Ø ≤ 12 mm)					86.66
S500, Ø > 12 mm					
14	116.16	1.25	145.43		
16	1184.12	1.64	1939.59		
Skupaj (S500, Ø > 12 mm)					2085.02
Skupaj					2171.68

IZVLEČEK ZA LIST ŠT.: 3

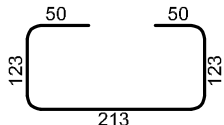
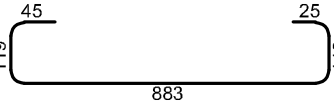
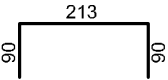
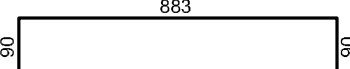
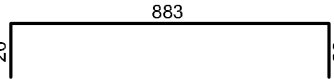
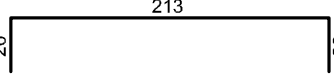
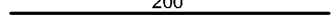
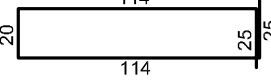
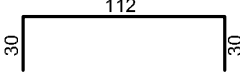
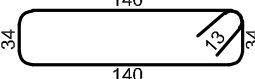
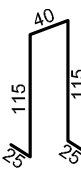
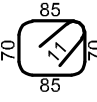
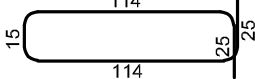
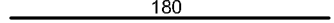
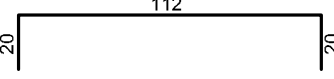
Palice - specifikacija

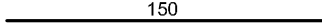
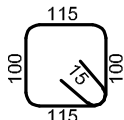
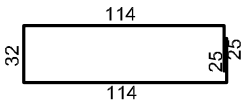
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POZ-T4 (1 kos)					
1		20	579.00	74	428.46
2		20	1200.00	19	228.00
3		16	413.00	74	305.62
4		20	1113.00	19	211.47
5		16	953.00	8	76.24
6		16	273.00	8	21.84
7		16	200.00	28	56.00
8		14	298.00	16	47.68
9		14	172.00	2	3.44
10		12	384.00	20	76.80
11	 3D geometrija	12	320.00	16	51.20
12		10	332.00	12	39.84
13		14	293.00	8	23.44
14		16	180.00	80	144.00
15		10	152.00	16	24.32
16		10	186.00	12	22.32

IZVLEČEK ZA LIST ŠT.: 3					
17		16	150.00	32	48.00
18		14	460.00	18	82.80
19		14	310.00	1	3.10
Palice - izvleček					
Ø [mm]	lg [m]	Teža enote [kg/m']		Teža [kg]	
S500, Ø ≤ 12 mm					
10	86.48	0.65		56.13	
12	128.00	0.92		117.76	
Skupaj (S500, Ø ≤ 12 mm)					173.89
S500, Ø > 12 mm					
14	160.46	1.25		200.90	
16	651.70	1.64		1067.48	
20	867.93	2.58		2239.26	
Skupaj (S500, Ø > 12 mm)					3507.64
Skupaj					3681.53

IZVLEČEK ZA LIST ŠT.: 4

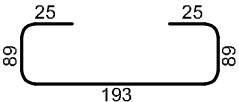
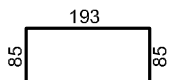
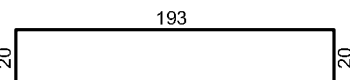
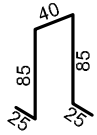
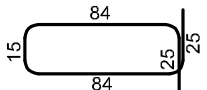
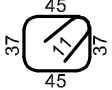
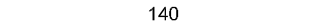
Palice - specifikacija

ozn	oblika in mere [cm]	Ø [mm]	lg [cm]	n [kos]	lg _n [m]
POZ-T5 (3 kos)					
1		20	559.00	216	1207.44
2		20	1191.00	54	643.14
3		16	393.00	216	848.88
4		20	1063.00	54	574.02
5		16	923.00	24	221.52
6		16	253.00	24	60.72
7		16	200.00	78	156.00
8		14	298.00	48	143.04
9		14	172.00	6	10.32
10		12	374.00	60	224.40
11	 3D geometrija	12	320.00	48	153.60
12		10	332.00	36	119.52
13		14	293.00	24	70.32
14		16	180.00	240	432.00
15		10	152.00	48	72.96
16		10	186.00	27	50.22

IZVLEČEK ZA LIST ŠT.: 4					
17		16	150.00	72	108.00
18		14	460.00	54	248.40
19		14	310.00	3	9.30
Palice - izvleček					
Ø [mm]	lgn [m]	Teža enote [kg/m']		Teža [kg]	
S500, Ø ≤ 12 mm					
10	242.70	0.65	157.51		
12	378.00	0.92	347.76		
Skupaj (S500, Ø ≤ 12 mm)					505.27
S500, Ø > 12 mm					
14	481.38	1.25	602.69		
16	1827.12	1.64	2992.82		
20	2424.60	2.58	6255.47		
Skupaj (S500, Ø > 12 mm)					9850.98
Skupaj					10356.25

IZVLEČEK ZA LIST ŠT.: 5

Palice - specifikacija

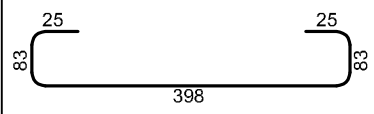
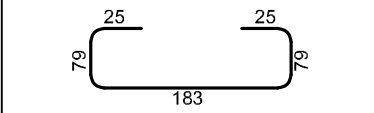
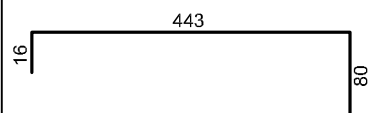
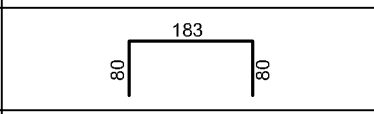
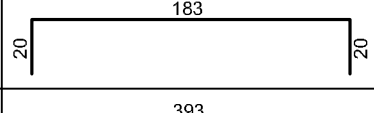
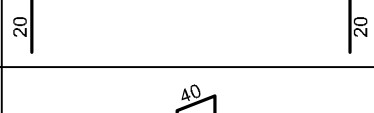
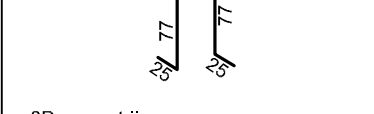
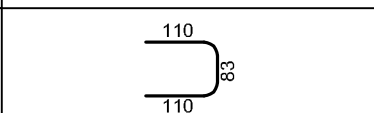
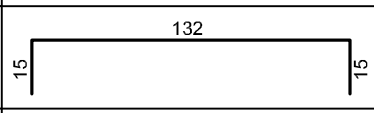
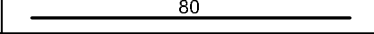
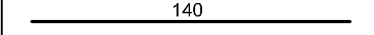
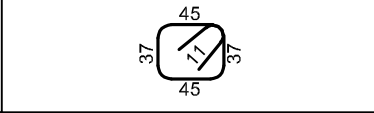
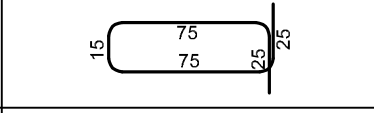
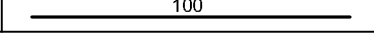
ozn	oblika in mere [cm]	Ø [mm]	lg [cm]	n [kos]	lgn [m]
POZ-T2 (1 kos)					
1		16	429.00	14	60.06
2		16	421.00	14	58.94
3		16	363.00	28	101.64
4		16	233.00	12	27.96
5	 3D geometrija	12	260.00	6	15.60
6		14	233.00	6	13.98
7		10	186.00	9	16.74
8		14	140.00	24	33.60

Palice - izvleček

Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500, Ø ≤ 12 mm			
10	16.74	0.65	10.86
12	15.60	0.92	14.35
Skupaj (S500, Ø ≤ 12 mm)			25.22
S500, Ø > 12 mm			
14	47.58	1.25	59.57
16	248.60	1.64	407.21
Skupaj (S500, Ø > 12 mm)			466.78
Skupaj			491.99

IZVLEČEK ZA LIST ŠT.: 6

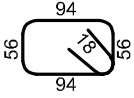
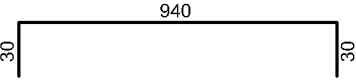
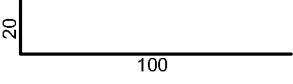
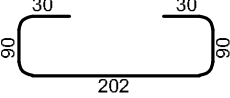
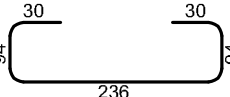
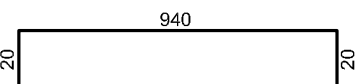
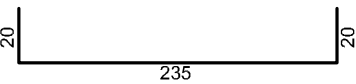
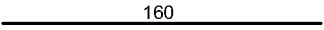
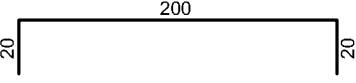
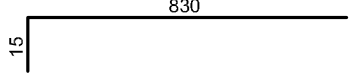
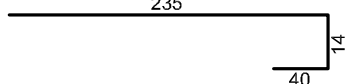
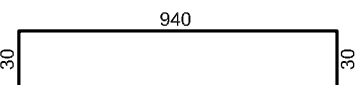
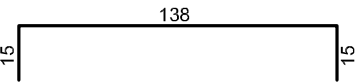
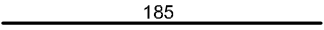
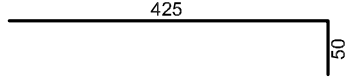
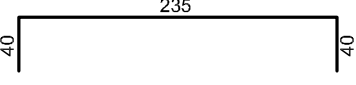
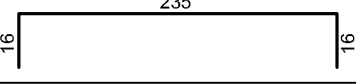
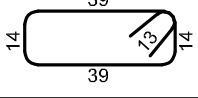
Palice - specifikacija

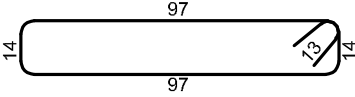
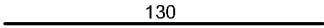
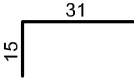
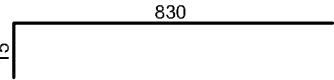
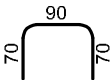
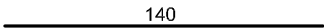
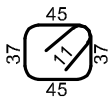
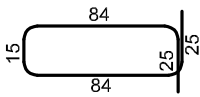
ozn	oblika in mere [cm]	Ø [mm]	lg [cm]	n [kos]	lgn [m]
POZ-T1 (1 kos)					
1		16	614.00	13	79.82
2		16	391.00	27	105.57
3		16	539.00	13	70.07
4		16	343.00	27	92.61
5		16	223.00	4	8.92
6		16	433.00	4	17.32
7	 3D geometrija	12	244.00	8	19.52
8		14	303.00	9	27.27
9		14	162.00	6	9.72
10		16	80.00	7	5.60
11		14	140.00	24	33.60
12		10	186.00	9	16.74
13		14	215.00	6	12.90
14		12	100.00	13	13.00

IZVLEČEK ZA LIST ŠT.: 6			
Palice - izvleček			
Ø [mm]	lgn [m]	Teža enote [kg/m']	Teža [kg]
S500, Ø ≤ 12 mm			
10	16.74	0.65	10.86
12	32.52	0.92	29.92
Skupaj (S500, Ø ≤ 12 mm)			40.78
S500, Ø > 12 mm			
14	83.49	1.25	104.53
16	379.91	1.64	622.29
Skupaj (S500, Ø > 12 mm)			726.82
Skupaj			767.60

IZVLEČEK ZA LIST ŠT.: 7 in 8

Palice - specifikacija

ozn	oblika in mere [cm]	Ø [mm]	lg [cm]	n [kos]	lg _n [m]
POZ-T0 (1 kos)					
1		16	336.00	50	168.00
2		20	1000.00	6	60.00
3		16	120.00	56	67.20
4		16	442.00	16	70.72
5		16	484.00	14	67.76
6		16	980.00	6	58.80
7		16	275.00	5	13.75
8		20	160.00	12	19.20
9		16	240.00	3	7.20
10		10	845.00	10	84.50
11		10	289.00	50	144.50
12		20	1000.00	15	150.00
13		14	168.00	6	10.08
14		20	185.00	8	14.80
15		20	475.00	8	38.00
16		16	315.00	14	44.10
17		16	267.00	39	104.13
18		12	132.00	14	18.48

IZVLEČEK ZA LIST ŠT.: 7 in 8					
19		12	248.00	14	34.72
20		20	130.00	18	23.40
21		14	46.00	256	117.76
22		14	845.00	4	33.80
23		14	230.00	6	13.80
24		14	140.00	24	33.60
25		10	186.00	9	16.74
26		14	233.00	6	13.98
Palice - izvleček					
Ø [mm]	lg [m]	Teža enote [kg/m']		Teža [kg]	
S500, Ø ≤ 12 mm					
10	245.74	0.65		159.49	
12	53.20	0.92		48.94	
Skupaj (S500, Ø ≤ 12 mm)					208.43
S500, Ø > 12 mm					
14	223.02	1.25		279.22	
16	601.66	1.64		985.52	
20	305.40	2.58		787.93	
Skupaj (S500, Ø > 12 mm)					2052.67
Skupaj					2261.10