**Projektiranje Sudić d.o.o.**
za projektiranje, nadzor i savjetovanje
www.projektiranje-sudic.com

Adresa | Stara cesta 20a, 10430 Samobor
Kontakt | +385(0)1/888-9621
OIB | 95112538705

| | |
|---|---|
| Investitor | **EUROCOM d.o.o.** |
| Adresa | **Pod bregom 8, Donji Stupnik** |
| OIB | **61781931283** |

| | |
|---|---|
| Građevina | **Distributivno-proizvodno-logistički centar EUROCOM** |
| Lokacija | **k.č.br. 7007/1, k.o. Stupnik Novi** |

| | |
|---|---|
| Razina | **GLAVNI PROJEKT – I. IZMJENA I DOPUNA** |
| Mapa 3 | **GRAĐEVINSKI PROJEKT – PROJEKT ČELIČNE KONSTRUKCIJE** |
| T.D. | **775/2021** |
| Z.O.P. | **GP01/21** |

Projektant konstrukcije | **Ozren Sudić, dipl.ing.građ.**
ovlašteni inženjer građevinarstva

Hrvatska komora inženjera građevinarstva
Digitally signed by OZREN SUDIĆ
Date: 2021.05.13 12:23:24 +02'00'

Glavni projektant | **Alena Rosandić-Vujnović, dipl.ing.arh.**
ovlaštena arhitektica

ALENA ROSANDIĆ -VUJNOVIĆ
Digitalno potpisao: ALENA ROSANDIĆ-VUJNOVIĆ
Datum: 2021.05.13 12:44:03 +02'00'

Samobor, travanj 2021.

Projektiranje Sudić d.o.o.

OZREN SUDIĆ
Digitally signed by OZREN SUDIĆ
Date: 2021.05.13 12:24:21 +02'00'

**Ozren Sudić, dipl.ing.građ.**

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**STRANICA ZA OVJERU REVIDENTA**

# 1. OPĆI DIO

## 1.1. Popis mapa

| MAPA | NAZIV MAPE | PROJEKTANT | |
|---|---|---|---|
| 1 | Knjiga 1/2 Arhitektonski projekt 01/21 | **Alena Rosandić-Vujnović, dipl.ing arh.**<br>A2710<br>MOVERE COLLIS j.d.o.o. | |
| | Knjiga 2/2 Prikaz svih primijenjenih mjera zaštite od požara 280521 | **Željko Mužević, univ. spec. aedif.**<br>Upisni broj 64<br>Flamit d.o.o. | |
| 2 | Građevinski projekt – statički proračun TD 27/21 | **Vesna Babić, dipl.ing.građ.**<br>G2481<br>Ured ovlaštenog inženjera građevinarstva | |
| 3 | Građevinski projekt – Projekt čelične konstrukcije 775/2021 | **Ozren Sudić, dipl.ing.građ.**<br>G576<br>Projektiranje Sudić d.o.o. | |
| 4 | Građevinski projekt – Projekt interne prometnice VIS-036-2021-GP | **Ana Sušac, dipl. ing. građ.**<br>G4455<br>VISVALDIS j.d.o.o. | |
| 5 | Građevinski projekt – Instalacije vodoopskrbe i odvodnje BP: 08-2021 | **Josip Ceboci dipl.ing.građ.**<br>G543<br>**Aqua.omega d.o.o.** | |
| 6 | Strojarski projekt – Projekt strojarskih instalacija grijanja, hlađenja i ventilacije 10/2021-S | **Slavko Duvnjak, dipl.ing.stroj.**<br>S368<br>NORA DVA d.o.o. | |
| 7 | Elektrotehnički projekt- Projekt niskonaponskih instalacija i elektroničke komunikacijske mreže TD-E 1804/21 | Ivan Đurđević, dipl.ing.el.<br>E284<br>Slimel d.o.o. | |

**Podloge za izradu:**

| | | | |
|---|---|---|---|
| a | Elaborat zaštite na radu<br>VIS-037-2021-ZNR | **Maroje Sušac, dipl. ing. građ.**<br>G 4410<br>VISVALDIS j.d.o.o. | |

## 1.2. Preslik rješenja o registraciji poduzeća

REPUBLIKA HRVATSKA
TRGOVAČKI SUD U ZAGREBU

IZVADAK IZ SUDSKOG REGISTRA

SUBJEKT UPISA

MBS:
080714866

OIB:
95112538705

EUID:
HRSR.080714866

TVRTKA:
1 PROJEKTIRANJE SUDIĆ d.o.o. za projektiranje, nadzor i savjetovanje

1 PROJEKTIRANJE SUDIĆ d.o.o.

SJEDIŠTE/ADRESA:
4 Mala Rakovica (Grad Samobor)
Stara cesta 20/A

ADRESA ELEKTRONIČKE POŠTE:
4 ozren.sudic@projektiranje-sudic.com

PRAVNI OBLIK:
1 društvo s ograničenom odgovornošću

PREDMET POSLOVANJA:
1 * - Kupnja i prodaja robe
1 * - Obavljane trgovačkog posredovanja na domaćem i inozemnom tržištu
1 * - Djelatnost javnog cestovnog prijevoza putnika i tereta u domaćem i međunarodnom prometu
1 * - Poslovanje nekretninama
1 * - Poslovi upravljanja nekretninom i održavanje nekretnina
1 * - Posredovanje u prometu nekretninama
1 * - Zastupanje inozemnih tvrtki
1 * - Promidžba (reklama i propaganda)
1 * - Projektiranje, građenje, uporaba i uklanjanje građevina
1 * - Nadzor nad gradnjom
1 * - Upravljanje i održavanje zgrada
1 * - Stručni poslovi prostornog uređenja
1 * - Savjetovanje u vezi sa poslovanjem i upravljanjem
1 * - Tehničko ispitivanje i analiza
1 * - Iznajmljivanje strojeva i opreme, bez rukovatelja i predmeta za osobnu uporabu i kućanstvo
1 * - Turističke usluge u nautičkom turizmu
1 * - Turističke usluge u ostalim oblicima turističke ponude

REPUBLIKA HRVATSKA - TRGOVAČKI SUD U ZAGREBU - ZAGREB

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REPUBLIKA HRVATSKA
TRGOVAČKI SUD U ZAGREBU

IZVADAK IZ SUDSKOG REGISTRA

SUBJEKT UPISA

PREDMET POSLOVANJA:

| | | |
|---|---|---|
| 1 | * | - Ostale turističke usluge |
| 1 | * | - Pripremanje hrane i pružanje usluga prehrane |
| 1 | * | - Pripremanje i usluživanje pića i napitaka |
| 1 | * | - Pružanje usluga smještaja |
| 1 | * | - Pripremanje hrane za potrošnju na drugom mjestu sa ili bez usluživanja (u prijevoznom sredstvu, na priredbama i sl.) i opskrba tom hranom (catering) |
| 1 | * | - Grafički dizajn, industrijski dizajn i dizajn interijera |
| 1 | * | - Tiskanje časopisa i drugih periodičkih publikacija, knjiga i brošura, glazbenih djela i glazbenih rukopisa, karata i atlasa, plakata, igraćih karata, reklamnih kataloga, prospekata i drugih tiskanih oglasa, djelovodnika, albuma, dnevnika, kalendara, poslovnih obrazaca i drugih tiskanih komercijalnih publikacija, papirne robe za osobne potrebe i drugih tiskanih publikacija, pomoću knjigotiska, ofseta, fotogravure, fleksografije, sitotiska i drugih tiskarskih strojeva, strojeva za umnožavanje, računalnih pisača, fotokopiranja i termokopiranja |
| 1 | * | - Izrada reklama,natpisa i štambilja |
| 1 | * | - Izrada i montaža svjetlećih reklama i reklamnih panoa |

OSNIVAČI/ČLANOVI DRUŠTVA:

3 OZREN SUDIĆ, OIB: 56484876886
Mala Rakovica, STARA CESTA 20/A
1 - jedini osnivač d.o.o.

OSOBE OVLAŠTENE ZA ZASTUPANJE:

3 OZREN SUDIĆ, OIB: 56484876886
Mala Rakovica, STARA CESTA 20/A
1 - član uprave
1 - zastupa društvo pojedinačno i samostalno

TEMELJNI KAPITAL:
1 20.000,00 kuna

PRAVNI ODNOSI:
Osnivački akt:
1 Izjava o osnivanju od 30.11.2009.
4 Odlukom člana društva od 10.06.2020. godine izmijenjena je Izjava o osnivanju od 30.11.2009. godine u cijelosti Izjavom od 10.06.2020. godine koja se u potpunom tekstu dostavlja sudu u zbirku isprava.

REPUBLIKA HRVATSKA ZAGREB TRGOVAČKI SUD U ZAGREBU

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REPUBLIKA HRVATSKA
TRGOVAČKI SUD U ZAGREBU

IZVADAK IZ SUDSKOG REGISTRA

SUBJEKT UPISA

FINANCIJSKA IZVJEŠĆA:

| | Predano | God. | Za razdoblje | Vrsta izvještaja |
|---|---|---|---|---|
| eu | 12.06.20 | 2019 | 01.01.19 - 31.12.19 | GFI-POD izvještaj |

EVIDENCIJSKE DJELATNOSTI:

4 * - stručni poslovi zaštite okoliša
4 * - stručni poslovi zaštite od buke

Upise u glavnu knjigu proveli su:

| RBU | Tt | Datum | Naziv suda |
|---|---|---|---|
| 0001 | Tt-09/13485-2 | 08.12.2009 | Trgovački sud u Zagrebu |
| 0002 | Tt-09/13485-6 | 01.02.2010 | Trgovački sud u Zagrebu |
| 0003 | Tt-17/30016-1 | 26.07.2017 | Trgovački sud u Zagrebu |
| 0004 | Tt-20/13446-2 | 18.06.2020 | Trgovački sud u Zagrebu |
| eu | / | 15.10.2010 | elektronički upis |
| eu | / | 07.04.2011 | elektronički upis |
| eu | / | 16.05.2012 | elektronički upis |
| eu | / | 27.03.2013 | elektronički upis |
| eu | / | 23.05.2014 | elektronički upis |
| eu | / | 31.03.2015 | elektronički upis |
| eu | / | 30.03.2016 | elektronički upis |
| eu | / | 25.04.2017 | elektronički upis |
| eu | / | 23.04.2018 | elektronički upis |
| eu | / | 18.04.2019 | elektronički upis |
| eu | / | 12.06.2020 | elektronički upis |

U Zagrebu, 26. kolovoza 2020.

Ovlaštena osoba

REPUBLIKA HRVATSKA - TRGOVAČKI SUD U ZAGREBU - ZAGREB

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## 1.3. Rješenje o imenovanju projektanta

Na temelju članka 51. Zakona o gradnji (NN 153/13, 20/17) izdaje se

**RJEŠENJE O IMENOVANJU PROJEKTANTA br. 775/2021**

| | |
|---|---|
| Projektant: | OZREN SUDIĆ, dipl.ing.građ.<br>ovlašteni inženjer građevinarstva<br>Projektiranje Sudić d.o.o., Samobor |
| Oznaka rješenja: | klasa: UP/I-360-01/05-01/3576<br>ur.broj: 314-02-05-1<br>datum upisa: 28.06.2005. |
| za projektanta: | GRAĐEVINSKOG PROJEKTA – PROJEKT ČELIČNE KONSTRUKCIJE |
| za građevinu: | Distributivno-proizvodno-logistički centar EUROCOM |
| investitora: | EUROCOM d.o.o.<br>Pod bregom 8, Donji Stupnik<br>OIB: 61781931283 |
| na lokaciji: | k.č.br. 7007/1, k.o. Stupnik Novi |
| T.D.: | 775/2021 |
| Z.O.P.: | GP01/21 |

Imenovani zadovoljava odredbe čl. 51. Zakona o gradnji (NN 153/13, 20/17).

U Samoboru, travanj 2021.

**Projektiranje Sudić d.o.o.**

Ozren Sudić, dipl.ing.građ.

## 1.4. Rješenje u upisu u imenik ovlaštenih inženjera

REPUBLIKA HRVATSKA
HRVATSKA KOMORA ARHITEKATA
I INŽENJERA U GRADITELJSTVU

Klasa: UP/I-360-01/05-01/ 3576
Urbroj: 314-02-05-1
Zagreb, 30. lipnja 2005.

Na temelju članka 24. i članka 26. stavka 2. Zakona o Hrvatskoj komori arhitekata i inženjera u graditeljstvu ("Narodne novine", br. 47/98), Statuta Hrvatske komore arhitekata i inženjera u graditeljstvu ("Narodne novine", br. 40/99 i 112/99), Pravilnika o upisima u strukovne razrede Hrvatske komore arhitekata i inženjera u graditeljstvu, te na temelju Odluke Odbora za upis u Imenik ovlaštenih inženjera građevinarstva od 28.06.2005. godine, koji je rješavao po Zahtjevu za upis SUDIĆ OZRENA, dipl.ing.građ., SAMOBOR, ĆIRILOMETODSKA 19c, Odbor za upis donosi, a predsjednik Hrvatske komore arhitekata i inženjera u graditeljstvu potpisuje

## RJEŠENJE

1. U **Imenik ovlaštenih inženjera građevinarstva** upisuje se **SUDIĆ OZREN**, dipl.ing.građ., SAMOBOR, pod rednim brojem **3576**, s danom upisa **28.06.2005**. godine.

2. Upisom u **Imenik ovlaštenih inženjera građevinarstva**, SUDIĆ OZREN, dipl.ing.građ., stječe pravo na uporabu strukovnog naziva **"ovlašteni inženjer građevinarstva"** i pravo na obavljanje poslova temeljem članka 25. Zakona o Hrvatskoj komori arhitekata i inženjera u graditeljstvu, a u svezi s člankom 4. stavkom 1. Statuta Hrvatske komore arhitekata i inženjera u graditeljstvu, te ostala prava i dužnosti sukladno posebnim propisima.

3. Ovlašteni inženjer građevinarstva stječe pravo na **"inženjersku iskaznicu"** i **"pečat"**, koje izdaje Hrvatska komora arhitekata i inženjera u graditeljstvu.

4. Ovlašteni inženjer građevinarstva poslove iz točke 2. ovoga Rješenja dužan je obavljati stvarno i stalno, te sukladno temeljnim načelima i pravilima struke koje treba poštivati ovlašteni inženjer građevinarstva.

5. Ovlašteni inženjer građevinarstva dužan je plaćati Hrvatskoj komori arhitekata i inženjera u graditeljstvu članarinu i ostala davanja koja utvrde tijela Komore i Razreda.

2

**Obrazloženje**

SUDIĆ OZREN, dipl.ing.građ., podnio je Zahtjev za upis u Imenik ovlaštenih inženjera građevinarstva.

Odbor za upise razreda inženjera građevinarstva proveo je na sjednici održanoj 28.06.2005. godine postupak u povodu dostavljenog Zahtjeva, te je temeljem članka 24. stavka 2. i članka 26. stavka 2. Zakona o Hrvatskoj komori arhitekata i inženjera u graditeljstvu ("Narodne novine", br. 47/98), a u svezi s člankom 5. stavkom 4. i člankom 20. Statuta Hrvatske komore arhitekata i inženjera u graditeljstvu ("Narodne novine", br. 40/99 i 112/99), donio Odluku o upisu imenovanog u Imenik ovlaštenih inženjera građevinarstva. Predmetna Odluka dostavljena je stručnoj službi Komore na dovršetak postupka i na potpis predsjedniku Komore.

Ovlašteni inženjer građevinarstva stekao je pravo na obavljanje poslova projektiranja i/ili stručnog nadzora građenja prema članku 49. Zakona o gradnji ("Narodne novine", br. 175/03 i 100/04), u svojstvu odgovorne osobe upisom u Imenik ovlaštenih inženjera građevinarstva Hrvatske komore arhitekata i inženjera u graditeljstvu.

Ovlašteni inženjer građevinarstva može poslove projektiranja i/ili stučnog nadzora građenja obavljati samostalno u vlastitom uredu, zajedničkom uredu, projektantskom društvu, odnosno u drugoj pravnoj osobi registriranoj za tu djelatnost.

Ovlašteni inženjer građevinarstva dužan je u obavljanju poslova projektiranja i/ili stručnog nadzora građenja poštivati odredbe Zakona o gradnji i posebnih zakona, te osigurati da obavljanje poslova projektiranja i/ili stručnog nadzora bude u skladu s načelima i pravilima struke, koja treba poštivati ovlašteni inženjer građevinarstva.

Upisom u Imenik ovlaštenih inženjera građevinarstva imenovani je stekao pravo na "pečat" i "inženjersku iskaznicu" koje mu izdaje Hrvatska komora arhitekata i inženjera u graditeljstvu.

Na temelju svega prethodno navedenog, riješeno je kao u dispozitivu ovoga Rješenja.

Pouka o pravnom lijeku

Protiv ovog Rješenja žalba nije dopuštena, ali se može pokrenuti upravni spor podnošenjem tužbe Upravnom sudu Republike Hrvatske, u roku od 30 dana od primitka ovog Rješenja.

REPUBLIKA HRVATSKA 1 Hrvatska komora arhitekata i inženjera u graditeljstvu ZAGREB

PREDSJEDNIK KOMORE

dr.sc. Petar Đukan, dipl.ing.građ.

Dostaviti:

1. OZREN SUDIĆ, 10430 SAMOBOR, ĆIRILOMETODSKA 19c
2. U Zbirku isprava Komore
3. Pismohrana Komore

## 1.5. Izjava projektanta

Na temelju čl. 51. Zakona o gradnji (NN 153/13, 20/17) daje se ova

**IZJAVA PROJEKTANTA br. 775/2021**

o usklađenosti projekta

| | |
|---|---|
| Projektant: | OZREN SUDIĆ, dipl.ing.građ.<br>ovlašteni inženjer građevinarstva<br>Projektiranje Sudić d.o.o., Samobor |
| Oznaka rješenja: | klasa: UP/I-360-01/05-01/3576<br>ur.broj: 314-02-05-1<br>datum upisa: 28.06.2005. |
| Vrsta projekta: | GRAĐEVINSKI PROJEKT – PROJEKT ČELIČNE KONSTRUKCIJE |
| građevina: | Distributivno-proizvodno-logistički centar EUROCOM |
| investitor: | EUROCOM d.o.o.<br>Pod bregom 8, Donji Stupnik<br>OIB: 61781931283 |
| na lokaciji: | k.č.br. 7007/1, k.o. Stupnik Novi |
| T.D.: | 775/2021 |
| Z.O.P.: | GP01/21 |

Ovaj projekt je usklađen sa slijedećim posebnim zakonima, drugim propisima i posebnim uvjetima:

1. Zakon o gradnji (NN br. 153/13, 20/17)
2. Zakon o normizaciji (NN br. 163/03)
3. Zakon o zaštiti na radu (NN br. 71/14, 118/14)
4. Tehnički propis za građevinske konstrukcije (NN 17/17)

U Samoboru, travanj 2020.

Projektant:

Ozren Sudić, dipl.ing.građ.

# 2. TEHNIČKI DIO

## 2.1. Tehnički opis

### *Općenito*

Predmet projekta je proračun osnovne nosive čelične konstrukcije proizvodnog pogona, kao i pročelja s nadstrešnicama skladišta.

### *Opis konstrukcije*

Osnovna nosiva konstrukcija proizvodnog pogona sastoji se od čeličnih poluokvira na koje se oslanjaju krovne podrožnice. Podrožnice se izvode kao kontinuirane. Čelična konstrukcija sastoji se od sljedećih poprečnih presjeka:

- stupovi osnovnh poluokviri od valjanih profila HEA220
- stupovi zabata od hladnooblikovanih kvadratnih cijevnih profila QC120x5
- glavnih krovnih greda od valjanih profila IPE360
- podrožnice od valjanih profila HEA160,
- krovne stabilizacije od hladnooblikovanih kvadratnih cijevnih profila QC80x3

Čelična podkonstrukcija pročelja i nadstrešnice sastoje se od slijedećih poprečnih presjeka:

- stupova od valjanih profila IPE300
- stupova od valjanih profila HEA240
- konzolnih nosača od valjanih profila HEA140
- podrožnica od pravokutnih cijevnih profila PC120x80x4 i PC120x80x5
- zatega od hladnooblikovanih kvadratnih cijevnih profila QC80x4
- krovne stabilizacije od hladnooblikovanih kvadratnih cijevnih profila QC50x4

### *Djelovanja na konstrukciju*

Proračun konstrukcije provodi se za sljedeća opterećenja:

- stalni teret; prema dimenzijama i vrstama materijala i zapreminskim težinama,
- djelovanje snijega,
- djelovanje vjetra,
- djelovanje potresa.

Detaljan pregled i vrijednosti opterećenja dani su u poglavlju 2.2. Analiza opterećenja.

### *Materijali u konstrukciji*

Elementi konstrukcije proizvodnog pogona HEA220, IPE360 i HEA140 izrađuju se od čelika S355 sa normativnom granicom popuštanja 355 N/mm$^2$ , a svi ostali elementi izrađuju se od čelika S235 sa normativnom granicom popuštanja 235 N/mm$^2$. Vijčani montažni spojevi izvode se vijcima kvalitete 8.8 i 10.9 (EN 15048, EN14399).

Elementi konstrukcije izrađuju se u radionici u zavarenoj izvedbi, a na montaži se međusobno spajaju vijčanim vezama.

***Izvedba konstrukcije***

Čelična nosiva konstrukcija izvodi se prema izvedbenim i radioničkim nacrtima usklađenim s glavnim projektom čelične konstrukcije (izvedbenu dokumentaciju ovjerenu od strane ovlaštenog projektanta potrebno je dostaviti na pregled i ovjeru glavnom projektantu konstrukcije, prije početka izrade konstrukcije). Izvođač čelične konstrukcije treba prije radioničke izrade napraviti tehnološki plan zavarivanja, plan kontrole kvalitete zavarenih spojeva, te provoditi kontrolu zavarivanja. Također, izvođač čelične konstrukcije treba napraviti plan i redoslijed montiranja čelične konstrukcije na gradilištu, te provoditi kontrolu montaže. Radionička izrada i montaža čelične konstrukcije treba biti u skladu s EN 1090-1; EN 1090-2. Odabrana klasa izvođenja je EXC2. U skladu s odabranom klasom izvođenja potrebno je provoditi sve radnje kod radioničke izrade i montaže čelične konstrukcije te kontrolu izrade i montaže čelične konstrukcije. Zavarivanje se izvodi prema: EN 1993-1-1; EN 1993-1-8; EN 12345:1999; EN 288-2:1992; EN 288-3:1999. Dopuštena razina greške (kvalitete vara) određuje se prema HRN EN 25817:1992 (ISO 5817:1992) za grupu B.

***Antikorozivna zaštita konstrukcije***

Čelična konstrukcija svrstana je u okolinu C3M za vanjske elemente (nadstrešnice), te C2H za elemente u zatvorenim prostorima (HRN EN ISO 12944-2). Predviđena je antikorozivna zaštita cinčanjem.

***Projektirani vijek uporabe građevine i uvjeti za održavanje***

Sukladno HRN EN 1991-1 ovisno o vrsti konstrukcije razlikuju se četiri razreda sa različitim proračunskim uporabnim vijekom prema slijedećoj tablici:

Tablica 1. Razredba proračunskoga uporabnog vijeka (prema HRN EN 1991-1)

| Razred | Proračunski vijek (godine) | Primjer konstrukcije |
|---|---|---|
| **1** | 1-5 | Privremene konstrukcije |
| **2** | 25 | Zamjenjivi dijelovi konstrukcije, npr. grede pokretnih kranova, ležajevi |
| **3** | 50 | Konstrukcije zgrada ili druge uobičajene konstrukcije |
| **4** | 100 | Monumentalne građevine, mostovi i druge inženjerske konstrukcije |

Suglasno ovoj normi konstrukciju građevine koja je predmet projektiranja ovim projektom treba svrstati u treći razred što znači da je zahtijevani proračunski uporabni vijek ove građevine 50 godina.

Investitor ili korisnik građevine dužan je voditi brigu o stabilnosti konstrukcije za vrijeme korištenja građevine i provoditi sljedeće:

- izraditi program održavanja čelične konstrukcije,
- voditi evidenciju o čeličnoj konstrukciji putem knjige (servisne knjige) čelične konstrukcije,
- svake godine obaviti redovni pregled,
- svakih deset godina obaviti glavni pregled,
- provoditi radove obnove ili sanacije čelične konstrukcije utvrđene pregledima, a prema zakonima i propisima.

Projektant konstrukcije:

Ozren Sudić, dipl.ing.građ.

## 2.2. Analiza opterećenja

### 2.2.1. Stalno opterećenje

Stalno opterećenje konstrukcije:

| | |
|---|---|
| Pokrov | g = 0,30 kN/m$^2$ |
| Instalacije | g = 0,10 kN/m$^2$ |
| Vlastita težina konstrukcije* | |
| | **g = 0,40 kN/m$^2$** |

*Vlastita težina elemenata konstrukcije definirana je automatski unutar programskog paketa STAAD i Scia Engineer v19.

### 2.2.2. Djelovanje snijega

Opterećenje sukladno normi EN 1991-1-3. U nastavku je prikazana karta karakterističnog opterećenja snijegom.

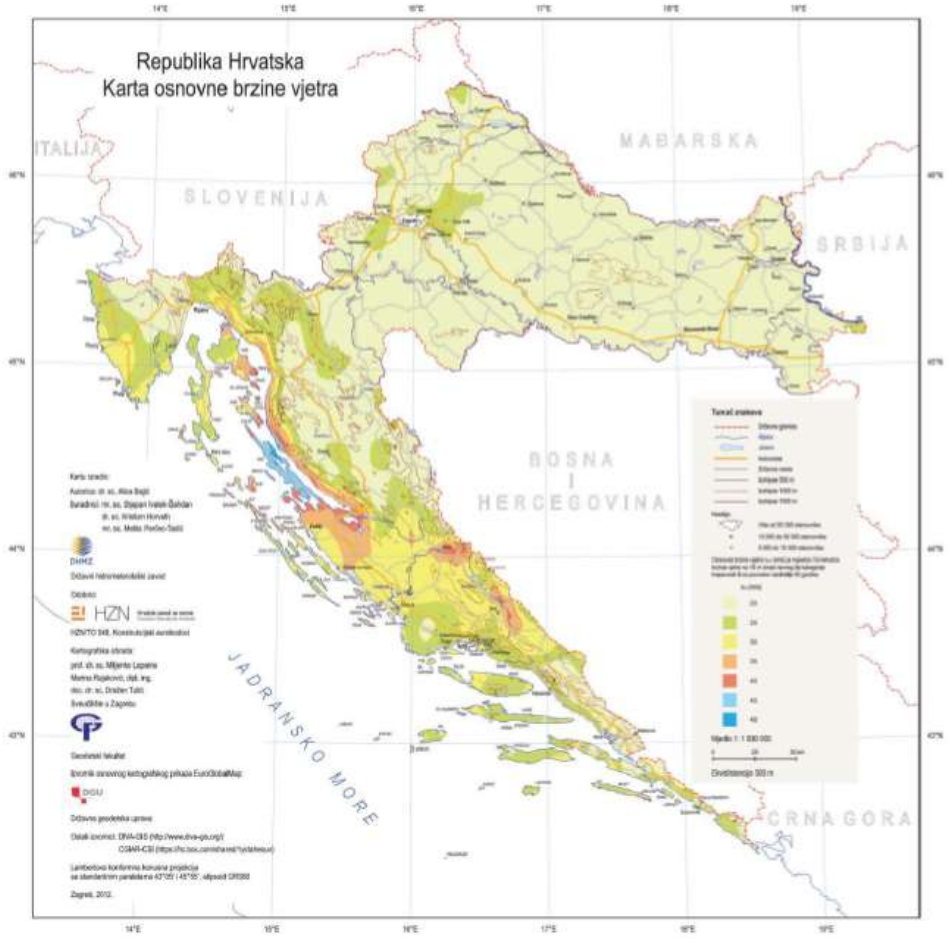



Za predmetnu lokaciju vrijede sljedeće vrijednosti opterećenja:

| | |
|---|---|
| Karakteristično opterećenje snijegom na tlu | $s_k$ = 1,25 kN/m$^2$ |
| Koeficijent umanjenja za nagib 0° < α ≤ 30° | $u_i$ = 0,80 kN/m$^2$ |
| Opterećenje snijegom na konstrukciju | **$s_1$ = 1,00 kN/m$^2$** |

### 2.2.3. Djelovanje vjetra

Opterećenje sukladno normi EN 1991-1-4. U nastavku je prikazana karta karakterističnog opterećenja vjetrom.

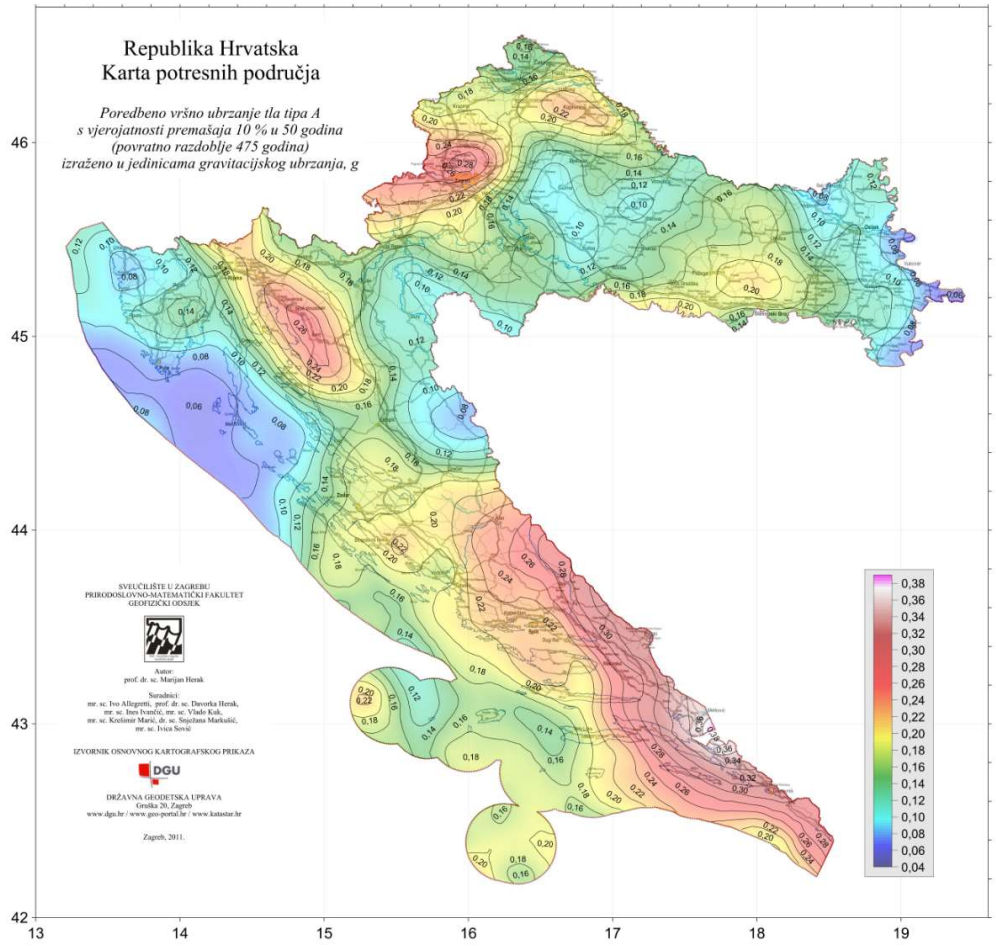



Za navedenu lokaciju vrijede sljedeće vrijednosti opterećenja:

| | |
|---|---|
| Srednja brzina vjetra (okomito na plohu) | $v_b$ = 20,00 m/s |
| Kategorija terena | II |
| Koeficijent izloženosti $c_e(z)$ | $c_e(z = 3,5\ m) = 1,85$ |
| Referentni pritisak srednje brzine vjetra | **$q_b$ = 0,39 kN/m²** |

### 2.2.4. Djelovanje potresa

Opterećenje sukladno normi EN 1998-1. U nastavku je prikazana karta potresnih područja.




Za predmetnu lokaciju i konstrukciju vrijede slijedeće vrijednosti:

| | |
|---|---|
| Odnos ag/g: 0.23 | |
| kategorija značaja | II |
| faktor ponašanja (čelična okvirna konstrukcija) | q = 2,00 |

Obzirom na visoku duktilnost materijala te prirodnu dispoziciju konstrukcije, opterećenje potresom nije mjerodavno za dimenzioniranje konstrukcije, te se u nastavku neće uzimati u obzir.

Projektant konstrukcije:

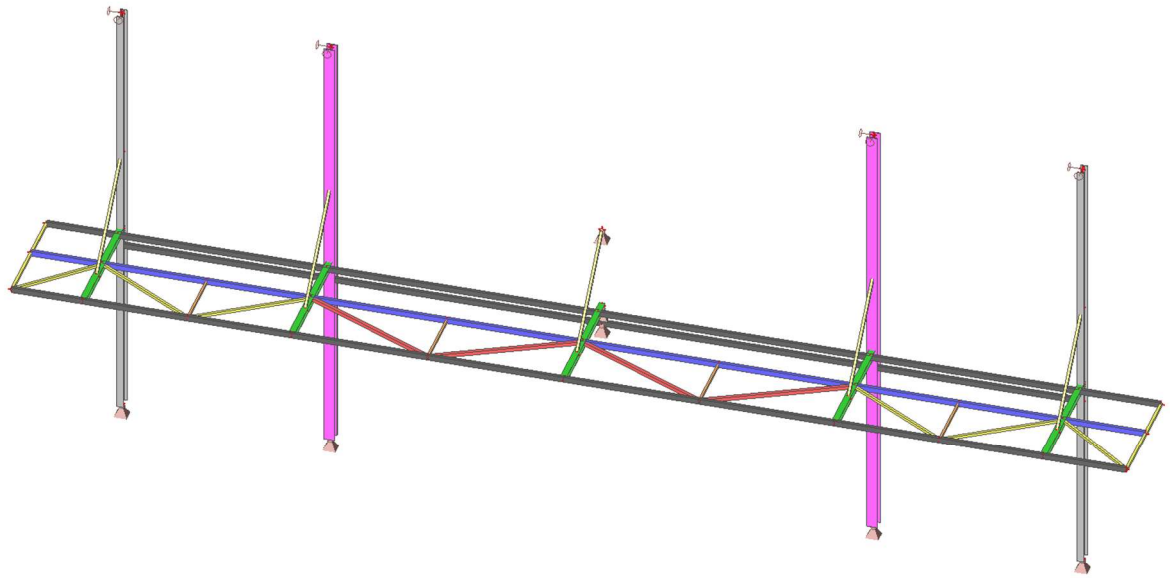
Ozren Sudić, dipl.ing.građ.

## 2.3. Proračun čelične konstrukcije

### 2.3.1. Proračun čelične konstrukcije nadstrešnice i pročelja u osi 7

Napomena: Dolje obrađena konstrukcija primjenjuje se i u osi 1.

*Prostorni prikaz konstrukcije*



*Profili konstrukcije*

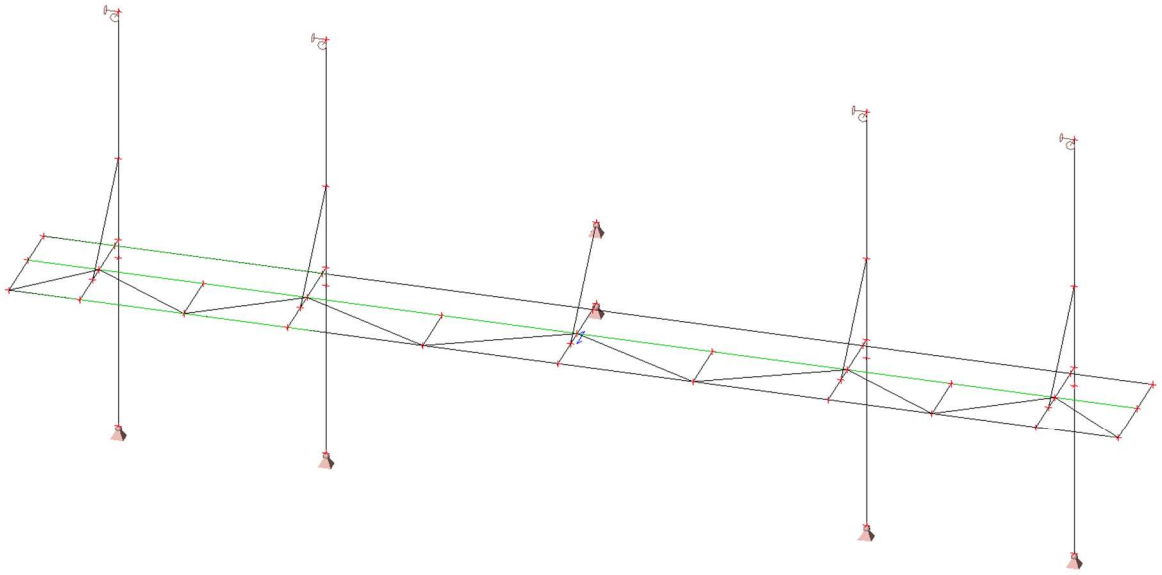
| Name | Type | Item material | Fabrication | A [$m^2$] | $A_y$ [$m^2$] | $I_y$ [$m^4$] | $W_{el.y}$ [$m^3$] | $W_{pl.y}$ [$m^3$] | Colour |
|---|---|---|---|---|---|---|---|---|---|
| | Detailed | | | | $A_z$ [$m^2$] | $I_z$ [$m^4$] | $W_{el.z}$ [$m^3$] | $W_{pl.z}$ [$m^3$] | |
| CS1 | RRK60/60/4 | S 235 | cold formed | 8.5500e-04 | 4.6442e-04 | 4.3600e-07 | 1.4500e-05 | 1.7600e-05 | |
| | | | | | 4.6442e-04 | 4.3600e-07 | 1.4500e-05 | 1.7600e-05 | |
| CS2 | HEA240 | S 235 | rolled | 7.6800e-03 | 5.6329e-03 | 7.7600e-05 | 6.7500e-04 | 7.4583e-04 | |
| | | | | | 1.8411e-03 | 2.7700e-05 | 2.3100e-04 | 3.5167e-04 | |
| CS3 | RRK80/80/4 | S 235 | cold formed | 1.1750e-03 | 6.2231e-04 | 1.1100e-06 | 2.7800e-05 | 3.3100e-05 | |
| | | | | | 6.2231e-04 | 1.1100e-06 | 2.7800e-05 | 3.3100e-05 | |
| CS4 | IPE300 | S 235 | rolled | 5.3800e-03 | 3.2165e-03 | 8.3560e-05 | 5.5700e-04 | 6.2800e-04 | |
| | | | | | 2.1512e-03 | 6.0400e-06 | 8.0500e-05 | 1.2500e-04 | |
| CS5 | HEA140 | S 235 | cold formed | 3.1400e-03 | 2.2882e-03 | 1.0300e-05 | 1.5500e-04 | 1.7333e-04 | |
| | | | | | 7.8192e-04 | 3.8900e-06 | 5.5600e-05 | 8.5000e-05 | |
| CS6 | RRK120/80/5 | S 235 | cold formed | 1.8360e-03 | 7.8970e-04 | 3.5300e-06 | 5.8900e-05 | 7.2400e-05 | |
| | | | | | 1.1468e-03 | 1.8800e-06 | 4.6900e-05 | 5.4700e-05 | |
| CS7 | RRK50/50/4 | S 235 | cold formed | 6.9500e-04 | 3.9018e-04 | 2.3700e-07 | 9.4900e-06 | 1.1700e-05 | |
| | | | | | 3.9018e-04 | 2.3700e-07 | 9.4900e-06 | 1.1700e-05 | |
| CS8 | RRK120/80/4 | S 235 | cold formed | 1.4950e-03 | 5.9761e-04 | 2.9500e-06 | 4.9100e-05 | 5.9800e-05 | |
| | | | | | 8.9642e-04 | 1.5700e-06 | 3.9300e-05 | 4.5200e-05 | |

*Opterećenja*

| Name | Description | Action type | Load group | Load type | Spec | Direction | Duration |
|---|---|---|---|---|---|---|---|
| LC1 | Vlastita težina | Permanent | G | Self weight | | -Z | |
| LC2 | Stalno | Permanent | G | Standard | | | |
| LC3 | Snijeg | Variable | S | Static | Standard | | Short |
| LC4 | Vjetar pritiskajući | Variable | W | Static | Standard | | Short |
| LC5 | Vjetar odižući | Variable | W | Static | Standard | | Short |

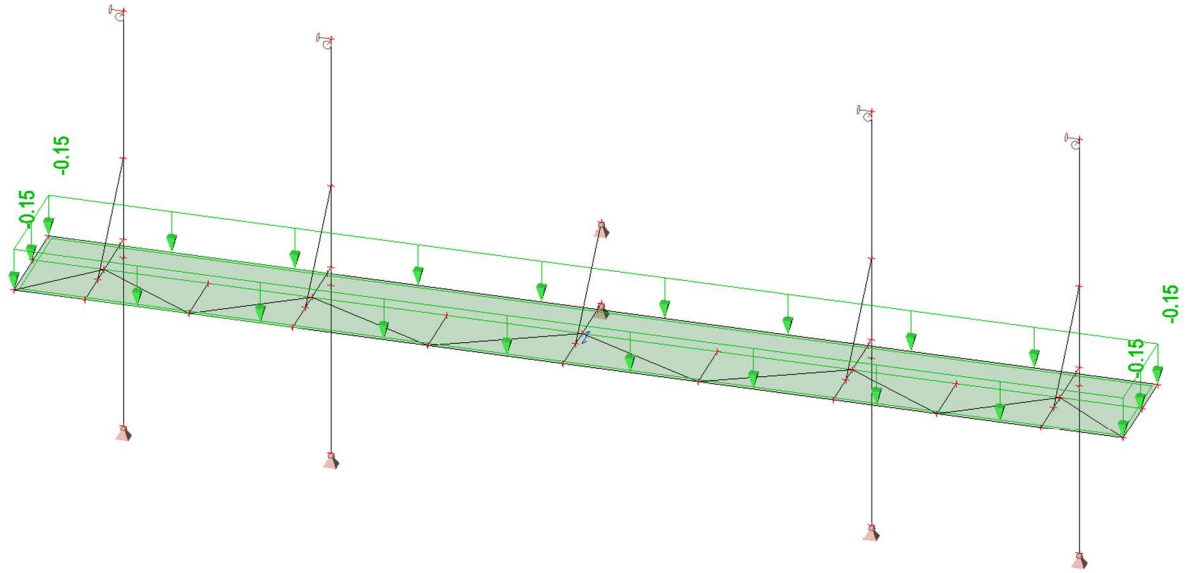
*LC1*

| Name | Description | Action type | Load group | Load type | Direction |
|---|---|---|---|---|---|
| LC1 | Vlastita težina | Permanent | G | Self weight | -Z |



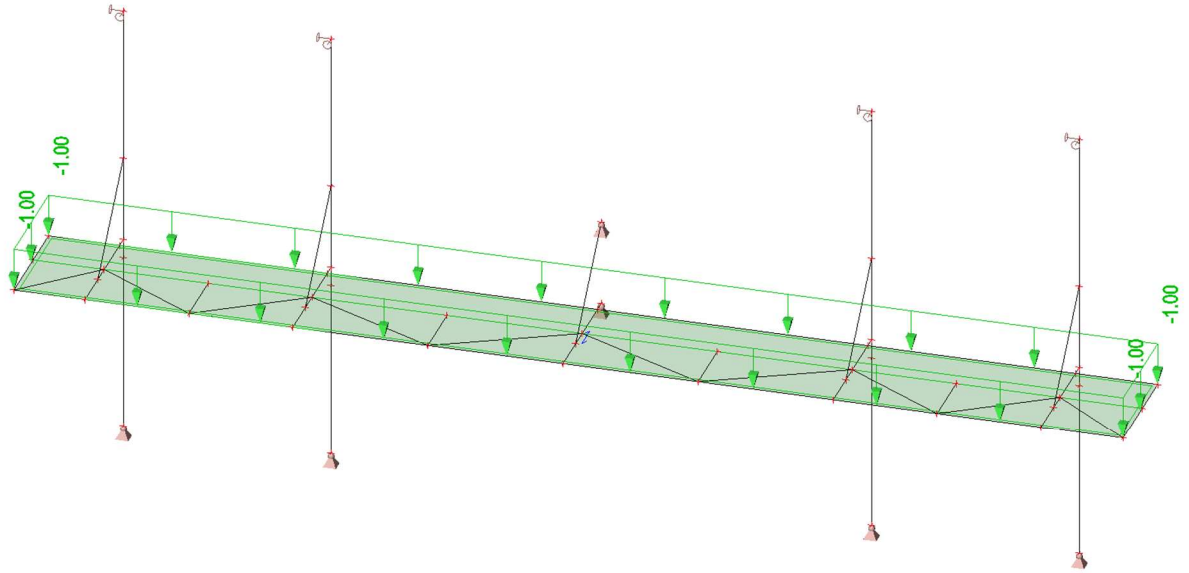
*LC2*

| Name | Description | Action type | Load group | Load type |
|---|---|---|---|---|
| LC2 | Stalno | Permanent | G | Standard |



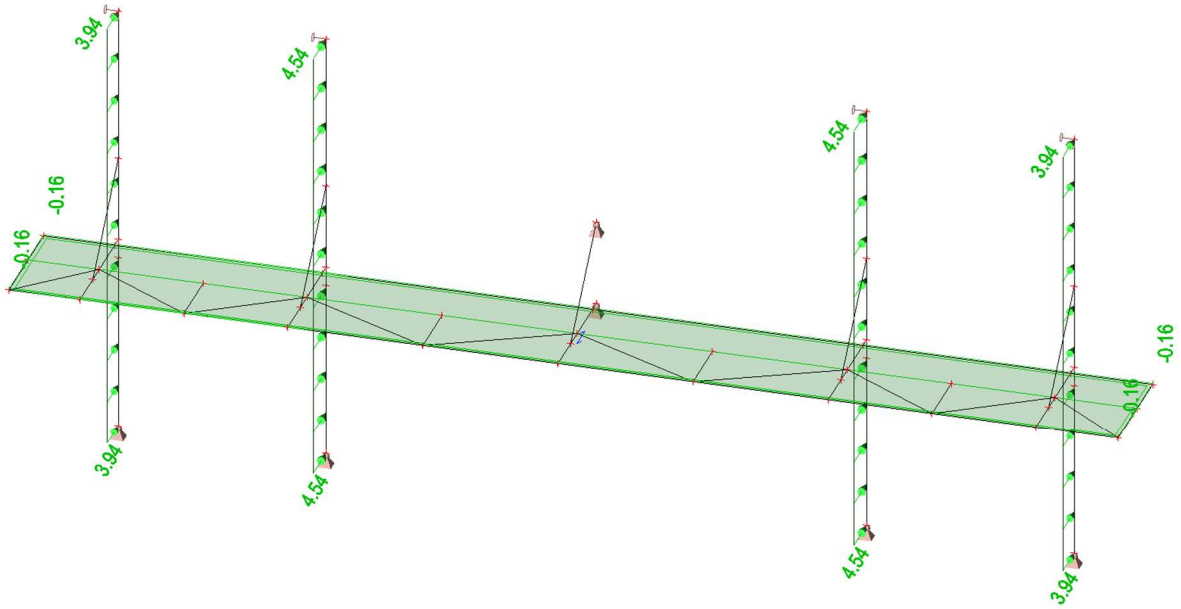
*LC3*

| Name | Description | Action type | Load group | Load type | Spec | Duration |
|---|---|---|---|---|---|---|
| LC3 | Snijeg | Variable | S | Static | Standard | Short |



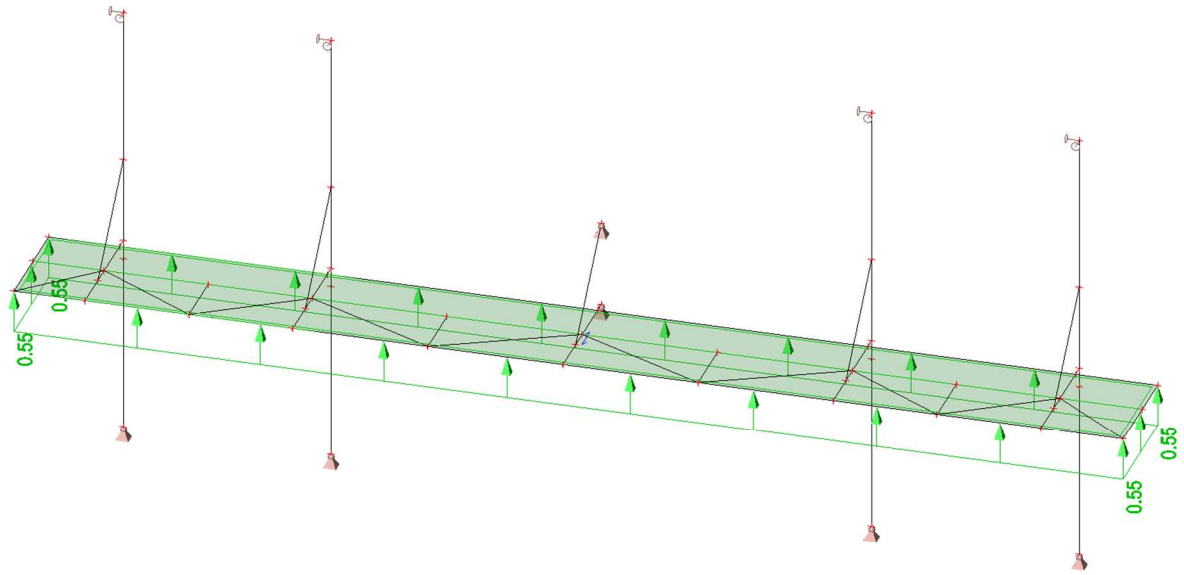
*LC4*

| Name | Description | Action type | Load group | Load type | Spec | Duration |
|---|---|---|---|---|---|---|
| LC4 | Vjetar pritiskajući | Variable | W | Static | Standard | Short |



*LC5*

| Name | Description | Action type | Load group | Load type | Spec | Duration |
|---|---|---|---|---|---|---|
| LC5 | Vjetar odižući | Variable | W | Static | Standard | Short |



*Kombinacije opterećenja*

| Name | Description | Type | Load cases | Coeff. [-] |
|---|---|---|---|---|
| GSN1 | | Envelope - ultimate | LC1 - Vlastita težina | 1.35 |
| | | | LC2 - Stalno | 1.35 |
| | | | LC3 - Snijeg | 1.50 |
| GSN2 | | Envelope - ultimate | LC1 - Vlastita težina | 1.35 |
| | | | LC2 - Stalno | 1.35 |
| | | | LC4 - Vjetar pritiskajući | 1.50 |
| GSN3 | | Envelope - ultimate | LC1 - Vlastita težina | 1.00 |
| | | | LC2 - Stalno | 1.00 |
| | | | LC5 - Vjetar odižući | 1.50 |
| GSN4 | | Envelope - ultimate | LC1 - Vlastita težina | 1.35 |
| | | | LC2 - Stalno | 1.35 |
| | | | LC3 - Snijeg | 1.50 |
| | | | LC4 - Vjetar pritiskajući | 0.90 |
| GSN5 | | Envelope - ultimate | LC1 - Vlastita težina | 1.35 |
| | | | LC2 - Stalno | 1.35 |
| | | | LC3 - Snijeg | 0.75 |
| | | | LC4 - Vjetar pritiskajući | 1.50 |
| GSU1 | | Envelope - serviceability | LC1 - Vlastita težina | 1.00 |
| | | | LC2 - Stalno | 1.00 |
| | | | LC3 - Snijeg | 1.00 |
| GSU2 | | Envelope - serviceability | LC1 - Vlastita težina | 1.00 |
| | | | LC2 - Stalno | 1.00 |
| | | | LC4 - Vjetar pritiskajući | 1.00 |
| GSU3 | | Envelope - serviceability | LC1 - Vlastita težina | 1.00 |
| | | | LC2 - Stalno | 1.00 |
| | | | LC5 - Vjetar odižući | 1.00 |
| GSU4 | | Envelope - serviceability | LC1 - Vlastita težina | 1.00 |
| | | | LC2 - Stalno | 1.00 |
| | | | LC3 - Snijeg | 1.00 |
| | | | LC4 - Vjetar pritiskajući | 0.60 |
| GSU5 | | Envelope - serviceability | LC1 - Vlastita težina | 1.00 |
| | | | LC2 - Stalno | 1.00 |
| | | | LC3 - Snijeg | 0.50 |
| | | | LC4 - Vjetar pritiskajući | 1.00 |

| Name | List |
|---|---|
| Anvelopa GSN | GSN1 - Envelope - ultimate |
| | GSN2 - Envelope - ultimate |
| | GSN3 - Envelope - ultimate |
| | GSN4 - Envelope - ultimate |
| | GSN5 - Envelope - ultimate |
| Anvelopa GSU | GSU1 - Envelope - serviceability |
| | GSU2 - Envelope - serviceability |
| | GSU3 - Envelope - serviceability |
| | GSU4 - Envelope - serviceability |
| | GSU5 - Envelope - serviceability |

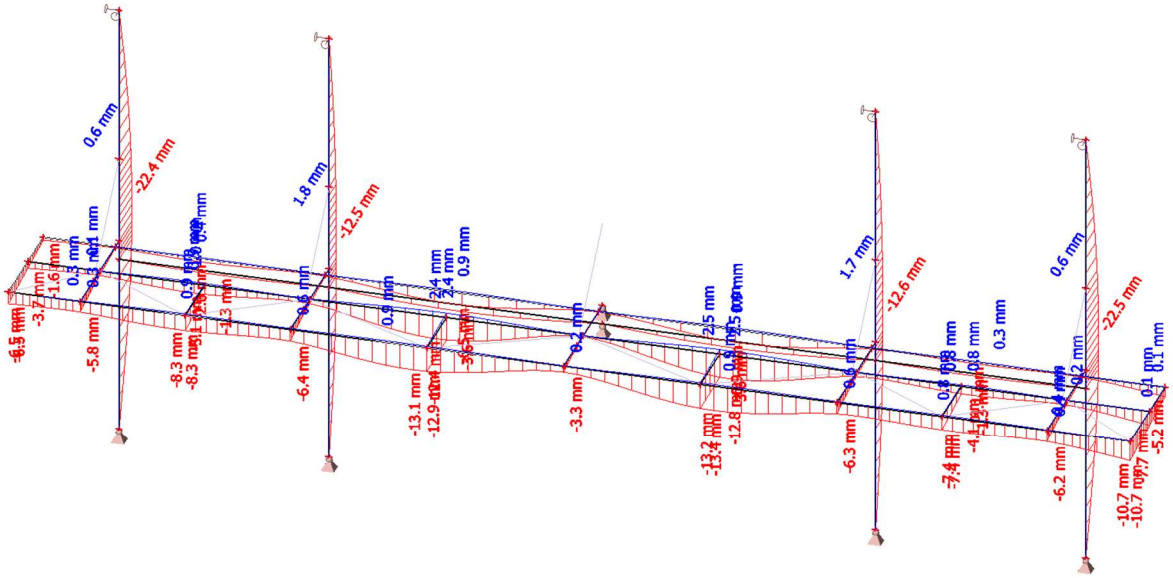
*Deformacije*

Linear calculation
Class: Anvelopa GSU
Coordinate system: Global
Extreme 1D: Global
Selection: All
**Deformations**

| Name | dx [m] | Case | $u_x$ [mm] | $u_y$ [mm] | $u_z$ [mm] | $\varphi_x$ [mrad] | $\varphi_y$ [mrad] | $\varphi_z$ [mrad] | $U_{total}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|
| B30 | 0.000 | GSU5/1 | **-1.8** | 17.4 | -6.3 | 0.0 | 0.0 | 0.0 | 18.6 |
| B25 | 2.375- | GSU5/1 | **1.7** | 17.5 | -5.7 | 2.0 | 0.4 | 2.1 | 18.5 |
| B1 | 7.324- | GSU1/2 | 0.0 | **-1.8** | -0.1 | 0.1 | 0.0 | 1.5 | 1.8 |
| B12 | 3.399- | GSU4/3 | 0.9 | 3.9 | **-13.4** | 1.9 | 0.0 | 1.6 | 14.0 |
| B15 | 3.399- | GSU3/4 | 0.0 | 0.0 | **2.5** | -0.1 | 0.1 | 0.0 | 2.5 |
| B3 | 0.000 | GSU5/1 | 0.0 | 0.0 | 0.0 | **-7.4** | 0.1 | 2.5 | 0.0 |
| B4 | 10.220 | GSU2/5 | 0.0 | 0.0 | -0.1 | **6.9** | -0.2 | -1.9 | 0.1 |

| Name | dx [m] | Case | $u_x$ [mm] | $u_y$ [mm] | $u_z$ [mm] | $\varphi_x$ [mrad] | $\varphi_y$ [mrad] | $\varphi_z$ [mrad] | $U_{total}$ [mm] |
|---|---|---|---|---|---|---|---|---|---|
| B16 | 4.635- | GSU4/3 | 0.2 | 1.0 | -6.7 | 0.6 | **-5.4** | -1.1 | 6.8 |
| B15 | 1.236- | GSU4/3 | -0.2 | 0.7 | -5.2 | 0.5 | **5.6** | 0.9 | 5.3 |
| B97 | 2.375- | GSU5/1 | 0.2 | 17.3 | -1.4 | 1.4 | -0.2 | **-3.3** | 17.3 |
| B94 | 2.375- | GSU5/1 | -0.3 | 17.4 | -0.7 | 1.4 | 0.1 | **3.4** | 17.4 |
| B108 | 0.000 | GSU5/1 | 1.7 | **25.9** | -9.6 | 2.0 | 2.5 | 1.9 | **27.6** |

*Deformacije - $u_z$*

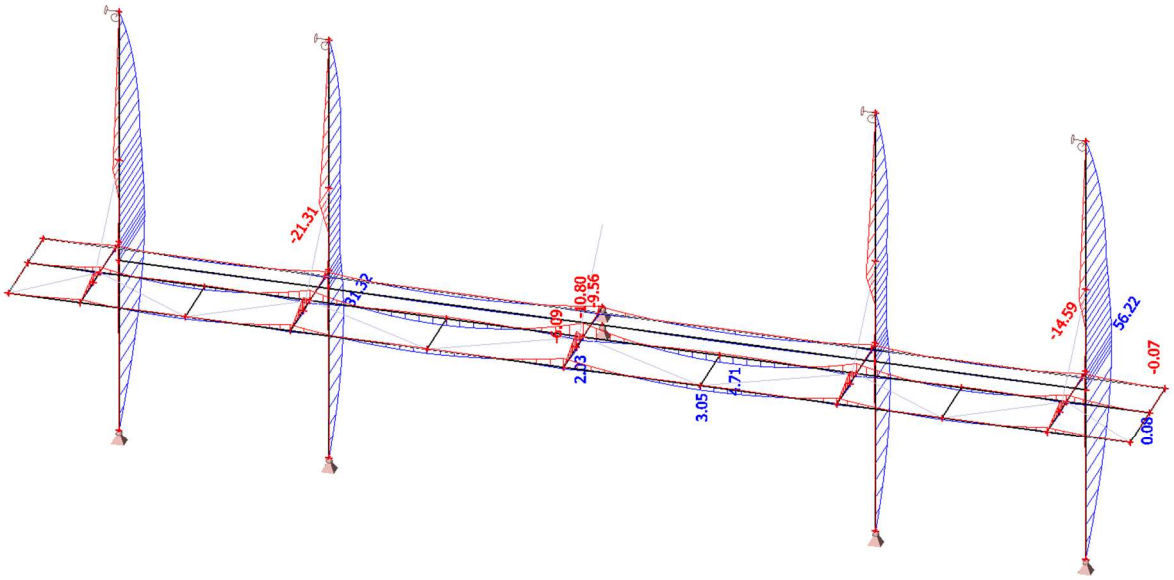



*Rezna sile*

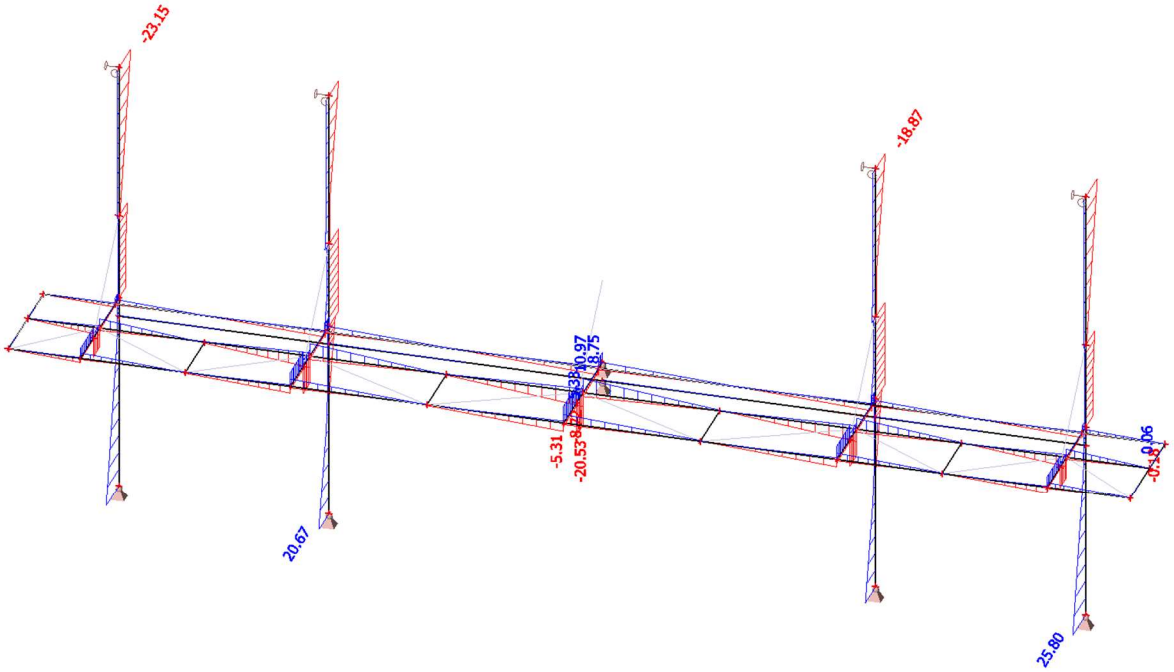
Linear calculation
Class: Anvelopa GSN
Coordinate system: Principal
Extreme 1D: Global
Selection: All

| Name | dx [m] | Case | N [kN] | $V_y$ [kN] | $V_z$ [kN] | $M_x$ [kNm] | $M_y$ [kNm] | $M_z$ [kNm] |
|---|---|---|---|---|---|---|---|---|
| B9 | 0.000 | GSN5/1 | **-112.45** | 0.03 | 4.29 | 0.00 | 0.00 | 0.00 |
| B12 | 0.000 | GSN5/1 | **211.89** | -0.25 | 3.69 | 0.00 | -4.22 | 0.77 |
| B4 | 10.220 | GSN2/2 | 0.00 | -0.06 | **-23.15** | 0.00 | 0.00 | 0.00 |
| B3 | 0.000 | GSN5/1 | -23.33 | 0.08 | **25.80** | 0.00 | 0.00 | 0.00 |
| B91 | 1.880 | GSN4/3 | 1.64 | -1.01 | 0.01 | **-0.10** | 0.06 | -0.80 |
| B106 | 0.000 | GSN5/1 | -1.57 | 0.00 | 0.37 | **0.09** | 0.00 | 0.00 |
| B1 | 6.600- | GSN1/4 | -27.76 | 0.00 | -18.85 | 0.00 | **-21.31** | 0.01 |
| B3 | 4.375- | GSN5/1 | -20.51 | -1.49 | -0.06 | 0.00 | **56.22** | 0.01 |
| B6 | 1.500- | GSN5/1 | 1.92 | **-8.00** | -1.07 | 0.00 | -0.23 | **-5.84** |
| B8 | 1.500- | GSN5/1 | 0.36 | **7.88** | -1.23 | 0.00 | -0.32 | **5.83** |

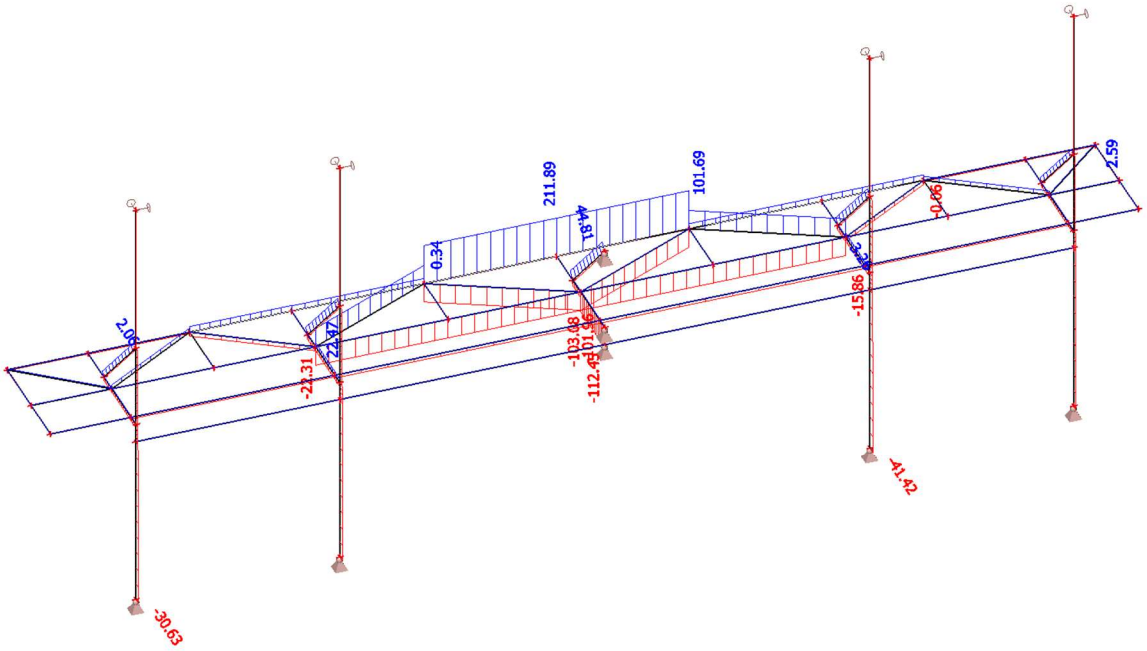
*Momenti savijanja; My*




*Poprečne sile; Vz*



*Uzdužne sile; N*

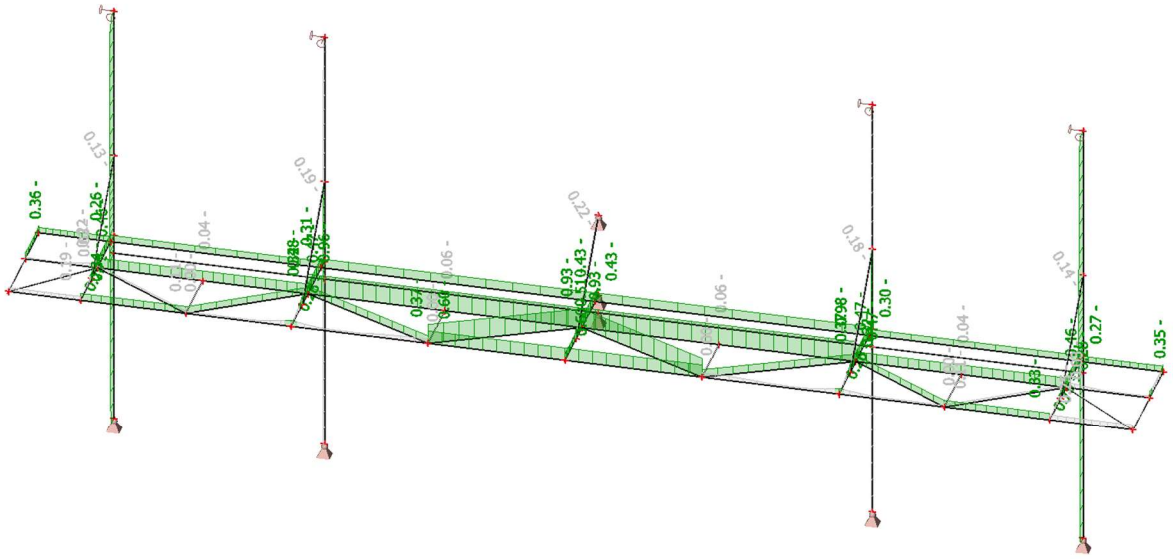


*Dimenzioniranje – svi elementi*

Linear calculation
Class: Anvelopa GSN
Coordinate system: Principal
Extreme 1D: Member
Selection: All
**Overall Unity Check**

| Name | dx [m] | Case | Cross-section | Material | $UC_{Overall}$ [-] | $UC_{Sec}$ [-] | $UC_{Stab}$ [-] |
|---|---|---|---|---|---|---|---|
| B1 | 4.150+ | GSN5/1 | CS2 - HEA240 | S 235 | **0.26** | 0.16 | 0.26 |
| B2 | 4.150+ | GSN5/1 | CS2 - HEA240 | S 235 | **0.26** | 0.15 | 0.26 |
| B3 | 4.150+ | GSN5/1 | CS4 - IPE300 | S 235 | **0.79** | 0.38 | 0.79 |
| B4 | 4.150+ | GSN5/1 | CS4 - IPE300 | S 235 | **0.79** | 0.37 | 0.79 |
| B5 | 1.500- | GSN4/2 | CS5 - HEA140 | S 235 | **0.47** | 0.28 | 0.47 |
| B6 | 1.500- | GSN5/1 | CS5 - HEA140 | S 235 | **0.46** | 0.46 | 0.45 |
| B7 | 1.500- | GSN4/2 | CS5 - HEA140 | S 235 | **0.47** | 0.28 | 0.47 |
| B8 | 1.500- | GSN5/1 | CS5 - HEA140 | S 235 | **0.46** | 0.46 | 0.45 |
| B9 | 2.000- | GSN4/2 | CS5 - HEA140 | S 235 | **0.51** | 0.51 | 0.38 |
| B11 | 3.090+ | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.60** | 0.60 | 0.00 |
| B12 | 0.000 | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.60** | 0.60 | 0.00 |
| B15 | 6.180 | GSN4/2 | CS6 - RRK120/80/5 | S 235 | **0.98** | 0.40 | 0.98 |
| B16 | 0.000 | GSN4/2 | CS6 - RRK120/80/5 | S 235 | **0.96** | 0.41 | 0.96 |
| B22 | 1.625 | GSN4/2 | CS6 - RRK120/80/5 | S 235 | **0.22** | 0.22 | 0.00 |
| B23 | 1.625 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.19** | 0.16 | 0.19 |
| B24 | 0.000 | GSN4/2 | CS6 - RRK120/80/5 | S 235 | **0.47** | 0.40 | 0.47 |
| B25 | 4.750 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.33** | 0.22 | 0.33 |
| B107 | 0.000 | GSN4/2 | CS1 - RRK60/60/4 | S 235 | **0.13** | 0.13 | 0.00 |
| B26 | 0.000 | GSN4/2 | CS1 - RRK60/60/4 | S 235 | **0.19** | 0.19 | 0.00 |
| B27 | 0.000 | GSN4/2 | CS1 - RRK60/60/4 | S 235 | **0.22** | 0.22 | 0.00 |
| B28 | 0.000 | GSN4/2 | CS1 - RRK60/60/4 | S 235 | **0.18** | 0.18 | 0.00 |
| B29 | 0.000 | GSN4/2 | CS1 - RRK60/60/4 | S 235 | **0.14** | 0.14 | 0.00 |
| B10 | 2.700 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.36** | 0.36 | 0.25 |
| B108 | 2.700 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.35** | 0.35 | 0.25 |
| B30 | 0.000 | GSN5/1 | CS7 - RRK50/50/4 | S 235 | **0.00** | 0.00 | 0.00 |
| B31 | 0.000 | GSN5/1 | CS7 - RRK50/50/4 | S 235 | **0.00** | 0.00 | 0.00 |
| B32 | 0.000 | GSN5/1 | CS7 - RRK50/50/4 | S 235 | **0.00** | 0.00 | 0.00 |
| B33 | 0.000 | GSN5/1 | CS7 - RRK50/50/4 | S 235 | **0.00** | 0.00 | 0.00 |
| B71 | 0.000 | GSN5/1 | CS3 - RRK80/80/4 | S 235 | **0.93** | 0.37 | 0.93 |
| B72 | 0.000 | GSN5/1 | CS3 - RRK80/80/4 | S 235 | **0.37** | 0.37 | 0.00 |
| B73 | 0.000 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.32** | 0.11 | 0.32 |
| B74 | 0.000 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.11** | 0.11 | 0.00 |
| B75 | 0.000 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.03** | 0.03 | 0.00 |
| B77 | 0.000 | GSN5/1 | CS3 - RRK80/80/4 | S 235 | **0.93** | 0.37 | 0.93 |

| Name | dx [m] | Case | Cross-section | Material | $UC_{Overall}$ [-] | $UC_{Sec}$ [-] | $UC_{Stab}$ [-] |
|---|---|---|---|---|---|---|---|
| B78 | 0.000 | GSN5/1 | CS3 - RRK80/80/4 | S 235 | **0.37** | 0.37 | 0.00 |
| B80 | 0.000 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.32** | 0.11 | 0.32 |
| B81 | 0.000 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.11** | 0.11 | 0.00 |
| B82 | 0.000 | GSN5/1 | CS1 - RRK60/60/4 | S 235 | **0.03** | 0.03 | 0.00 |
| B88 | 4.750 | GSN4/2 | CS6 - RRK120/80/5 | S 235 | **0.48** | 0.41 | 0.48 |
| B89 | 0.000 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.34** | 0.16 | 0.34 |
| B91 | 0.000 | GSN4/2 | CS6 - RRK120/80/5 | S 235 | **0.28** | 0.28 | 0.00 |
| B92 | 0.000 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.25** | 0.22 | 0.25 |
| B93 | 0.000 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.27** | 0.18 | 0.27 |
| B94 | 0.000 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.30** | 0.22 | 0.30 |
| B95 | 0.000 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.43** | 0.32 | 0.43 |
| B96 | 6.180 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.43** | 0.32 | 0.43 |
| B97 | 4.750 | GSN4/2 | CS8 - RRK120/80/4 | S 235 | **0.31** | 0.23 | 0.31 |
| B98 | 1.625 | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.26** | 0.25 | 0.26 |
| B102 | 2.375- | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.04** | 0.03 | 0.04 |
| B104 | 3.090- | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.06** | 0.05 | 0.06 |
| B105 | 3.090- | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.06** | 0.05 | 0.06 |
| B106 | 2.375- | GSN5/1 | CS8 - RRK120/80/4 | S 235 | **0.04** | 0.03 | 0.04 |



*Dimenzioniranje – kritični elementi*

Linear calculation
Class: Anvelopa GSN
Coordinate system: Principal
Extreme 1D: Cross-section
Selection: All

**EN 1993-1-1 Code Check**
National annex: Standard EN

| | | | | | |
|---|---|---|---|---|---|
| **Member B1** | **4.150 / 10.220 m** | **HEA240** | **S 235** | **Anvelopa GSN** | **0.26 -** |

| **Combination key** |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 0.75*LC3 + 1.50*LC4 |

**The critical check is on position 4.150 m**

| **Section check** | |
|---|---|
| Section classification | 1 |
| Compression check | 0.02 - |
| Bending moment check for $M_y$ | 0.16 - |
| Bending moment check for $M_z$ | 0.00 - |
| Shear check for $V_y$ | 0.00 - |
| Shear check for $V_z$ | 0.02 - |
| Combined bending, axial force and shear force check | 0.02 - |
| **Conclusion - section check** | 0.16 - |

| **Stability Check** | |
|---|---|
| Stability classification | 1 |
| Lateral Torsional Buckling check | 0.20 - |
| Bending and axial compression check | 0.26 - |
| **Conclusion - stability check** | 0.26 - |

| E/W/N | Description |
|---|---|
| N14 | Note: Since the axial force satisfies both criteria (6.33) and (6.34) of EN 1993-1-1 article 6.2.9.1(4) its effect on the moment resistance about the y-y axis is neglected. |
| N15 | Note: Since the axial force satisfies criteria (6.35) of EN 1993-1-1 article 6.2.9.1(4) its effect on the moment resistance about the z-z axis is neglected. |
| N16 | Note: Since the shear forces are less than half the plastic shear resistances their effect on the moment resistances is neglected. |
| N25 | Note: The slenderness or compression force is such that Flexural Buckling effects may be ignored according to EN 1993-1-1 article 6.3.1.2(4). |
| N29 | Note: For this I-section the Torsional(-Flexural) buckling resistance is higher than the resistance for Flexural buckling. Therefore Torsional(-Flexural) buckling is not printed on the output. |
| N39 | Note: C parameters are determined according to ECCS 119 2006 / Galea 2002. |
| N52 | Note: The web slenderness is such that Shear Buckling effects may be ignored according to EN 1993-1-5 article 5.1(2). |

**EN 1993-1-1 Code Check**
National annex: Standard EN

| Member B3 | 4.150 / 10.220 m | IPE300 | S 235 | Anvelopa GSN | 0.79 - |
|---|---|---|---|---|---|

| Combination key |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 0.75*LC3 + 1.50*LC4 |

**The critical check is on position 4.150 m**

| Section check | |
|---|---|
| Section classification | 1 |
| Compression check | 0.02 - |
| Bending moment check for $M_y$ | 0.38 - |
| Bending moment check for $M_z$ | 0.01 - |
| Shear check for $V_y$ | 0.00 - |
| Shear check for $V_z$ | 0.00 - |
| Combined bending, axial force and shear force check | 0.16 - |
| **Conclusion - section check** | 0.38 - |

| Stability Check | |
|---|---|
| Stability classification | 2 |
| Lateral Torsional Buckling check | 0.72 - |
| Bending and axial compression check | 0.79 - |
| **Conclusion - stability check** | 0.79 - |

| E/W/N | Description |
|---|---|
| N14 | Note: Since the axial force satisfies both criteria (6.33) and (6.34) of EN 1993-1-1 article 6.2.9.1(4) its effect on the moment resistance about the y-y axis is neglected. |
| N15 | Note: Since the axial force satisfies criteria (6.35) of EN 1993-1-1 article 6.2.9.1(4) its effect on the moment resistance about the z-z axis is neglected. |
| N16 | Note: Since the shear forces are less than half the plastic shear resistances their effect on the moment resistances is neglected. |
| N25 | Note: The slenderness or compression force is such that Flexural Buckling effects may be ignored according to EN 1993-1-1 article 6.3.1.2(4). |
| N28 | Note: The slenderness or compression force is such that Torsional(-Flexural) Buckling effects may be ignored according to EN 1993-1-1 article 6.3.1.2(4). |
| N39 | Note: C parameters are determined according to ECCS 119 2006 / Galea 2002. |
| N52 | Note: The web slenderness is such that Shear Buckling effects |

| E/W/N | Description |
|---|---|
| | may be ignored according to EN 1993-1-5 article 5.1(2). |

**EN 1993-1-3 Cold Formed Code Check**
National annex: Standard EN

| Member B9 | 2.000 / 3.000 m | HEA140 | S 235 | Anvelopa GSN | 0.51 - |
|---|---|---|---|---|---|

| Combination key |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 1.50*LC3 + 0.90*LC4 |

**The critical check is on position 2.000 m**

| Section check | |
|---|---|
| Compression check | 0.04 - |
| Bending moment check for $M_y$ | 0.30 - |
| Bending moment check for $M_z$ | 0.00 - |
| Shear check for $V_y$ | 0.00 - |
| Shear check for $V_z$ | 0.30 - |
| Torsion check | 0.34 - |
| Combined bending, axial force and shear force check | 0.34 - |
| Web Crippling | 0.34 - |
| Bending and Reaction | 0.51 - |
| **Conclusion - section check** | 0.51 - |

| Stability Check | |
|---|---|
| Bending and axial compression check | 0.38 - |
| **Conclusion - stability check** | 0.38 - |

**EN 1993-1-1 Code Check**
National annex: Standard EN

| Member B12 | 0.000 / 6.180 m | RRK120/80/4 | S 235 | Anvelopa GSN | 0.60 - |
|---|---|---|---|---|---|

Note: EN 1993-1-3 article 1.1(3) specifies that this part does not apply to cold formed CHS and RHS sections.
The default EN 1993-1-1 code check is executed instead of the EN 1993-1-3 code check.

| Combination key |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 0.75*LC3 + 1.50*LC4 |

**The critical check is on position 0.000 m**

| Section check | |
|---|---|
| Section classification | 1 |
| Tension check | 0.60 - |
| Bending moment check for $M_y$ | 0.30 - |
| Bending moment check for $M_z$ | 0.07 - |
| Shear check for $V_y$ | 0.00 - |
| Shear check for $V_z$ | 0.03 - |
| Torsion check | 0.00 - |
| Combined bending, axial force and shear force check | 0.21 - |
| **Conclusion - section check** | 0.60 - |

| E/W/N | Description |
|---|---|
| N12 | Note: The unity check for torsion is lower than the limit value. Therefore torsion is considered as insignificant and is ignored in the combined checks. |
| N16 | Note: Since the shear forces are less than half the plastic shear resistances their effect on the moment resistances is neglected. |
| N34 | Note: The cross-section concerns an RHS section with 'h / b < 10 / $\lambda_{rel,z}$'. This section is thus not susceptible to Lateral Torsional Buckling. |

**EN 1993-1-1 Code Check**
National annex: Standard EN

| | | | | | |
|---|---|---|---|---|---|
| **Member B15** | **6.180 / 6.180 m** | **RRK120/80/5** | **S 235** | **Anvelopa GSN** | **0.98 -** |

Note: EN 1993-1-3 article 1.1(3) specifies that this part does not apply to cold formed CHS and RHS sections.
The default EN 1993-1-1 code check is executed instead of the EN 1993-1-3 code check.

| **Combination key** |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 1.50*LC3 + 0.90*LC4 |

**The critical check is on position 6.180 m**

| **Section check** | |
|---|---|
| Section classification | 1 |
| Compression check | 0.15 - |
| Bending moment check for $M_y$ | 0.40 - |
| Bending moment check for $M_z$ | 0.06 - |
| Shear check for $V_y$ | 0.00 - |
| Shear check for $V_z$ | 0.05 - |
| Combined Shear and Torsion check for $V_y$ and $\tau_{t,Ed}$ | 0.00 - |
| Combined Shear and Torsion check for $V_z$ and $\tau_{t,Ed}$ | 0.05 - |
| Combined bending, axial force and shear force check | 0.22 - |
| **Conclusion - section check** | 0.40 - |

| **Stability Check** | |
|---|---|
| Stability classification | 1 |
| Flexural Buckling check | 0.35 - |
| Bending and axial compression check | 0.98 - |
| **Conclusion - stability check** | 0.98 - |

| **E/W/N** | **Description** |
|---|---|
| N16 | Note: Since the shear forces are less than half the plastic shear resistances their effect on the moment resistances is neglected. |
| N30 | Note: The cross-section concerns a RHS section which is not susceptible to Torsional(-Flexural) Buckling. |
| N34 | Note: The cross-section concerns an RHS section with 'h / b < 10 / $\lambda_{rel,z}$'. This section is thus not susceptible to Lateral Torsional Buckling. |

**EN 1993-1-1 Code Check**
National annex: Standard EN

| | | | | | |
|---|---|---|---|---|---|
| **Member B10** | **2.700 / 2.700 m** | **RRK60/60/4** | **S 235** | **Anvelopa GSN** | **0.36 -** |

Note: EN 1993-1-3 article 1.1(3) specifies that this part does not apply to cold formed CHS and RHS sections.
The default EN 1993-1-1 code check is executed instead of the EN 1993-1-3 code check.

| **Combination key** |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 0.75*LC3 + 1.50*LC4 |

**The critical check is on position 2.700 m**

| **Section check** | |
|---|---|
| Section classification | 1 |
| Compression check | 0.01 - |
| Bending moment check for $M_y$ | 0.01 - |
| Bending moment check for $M_z$ | 0.36 - |
| Shear check for $V_y$ | 0.04 - |
| Shear check for $V_z$ | 0.00 - |
| Combined Shear and Torsion check for $V_y$ and $\tau_{t,Ed}$ | 0.04 - |
| Combined Shear and Torsion check for $V_z$ and $\tau_{t,Ed}$ | 0.00 - |

| Section check | |
|---|---|
| Combined bending, axial force and shear force check | 0.18 - |
| **Conclusion - section check** | 0.36 - |

| Stability Check | |
|---|---|
| Stability classification | 1 |
| Bending and axial compression check | 0.25 - |
| **Conclusion - stability check** | 0.25 - |

| E/W/N | Description |
|---|---|
| N16 | Note: Since the shear forces are less than half the plastic shear resistances their effect on the moment resistances is neglected. |
| N25 | Note: The slenderness or compression force is such that Flexural Buckling effects may be ignored according to EN 1993-1-1 article 6.3.1.2(4). |
| N30 | Note: The cross-section concerns a RHS section which is not susceptible to Torsional(-Flexural) Buckling. |
| N34 | Note: The cross-section concerns an RHS section with 'h / b < 10 / $\lambda_{rel,z}$'. This section is thus not susceptible to Lateral Torsional Buckling. |

**EN 1993-1-1 Code Check**
National annex: Standard EN

| Member B32 | 0.000 / 1.500 m | RRK50/50/4 | S 235 | Anvelopa GSN | 0.00 - |
|---|---|---|---|---|---|

Note: EN 1993-1-3 article 1.1(3) specifies that this part does not apply to cold formed CHS and RHS sections.
The default EN 1993-1-1 code check is executed instead of the EN 1993-1-3 code check.

| Combination key |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 0.75*LC3 + 1.50*LC4 |

**The critical check is on position 0.000 m**

| Section check | |
|---|---|
| Section classification | 1 |
| Tension check | 0.00 - |
| **Conclusion - section check** | 0.00 - |

**EN 1993-1-1 Code Check**
National annex: Standard EN

| Member B71 | 0.000 / 3.435 m | RRK80/80/4 | S 235 | Anvelopa GSN | 0.93 - |
|---|---|---|---|---|---|

Note: EN 1993-1-3 article 1.1(3) specifies that this part does not apply to cold formed CHS and RHS sections.
The default EN 1993-1-1 code check is executed instead of the EN 1993-1-3 code check.

| Combination key |
|---|
| Anvelopa GSN / 1.35*LC1 + 1.35*LC2 + 0.75*LC3 + 1.50*LC4 |

**The critical check is on position 0.000 m**

| Section check | |
|---|---|
| Section classification | 1 |
| Compression check | 0.37 - |
| **Conclusion - section check** | 0.37 - |

| Stability Check | |
|---|---|
| Stability classification | 1 |
| Flexural Buckling check | 0.93 - |
| **Conclusion - stability check** | 0.93 - |

| E/W/N | Description |
|---|---|
| N30 | Note: The cross-section concerns a RHS section which is not susceptible to Torsional(-Flexural) Buckling. |

### 2.3.2. Proračun čelične konstrukcije proizvodnog pogona

Napomena: Dolje obrađena konstrukcija primjenjuje se i u osi 1.

## Osnovne informacije

| | | | |
|---|---|---|---|
| **Structure Type** | SPACE FRAME | | |
| Number of Nodes | 95 | Highest Node | 95 |
| Number of Elements | 154 | Highest Beam | 154 |

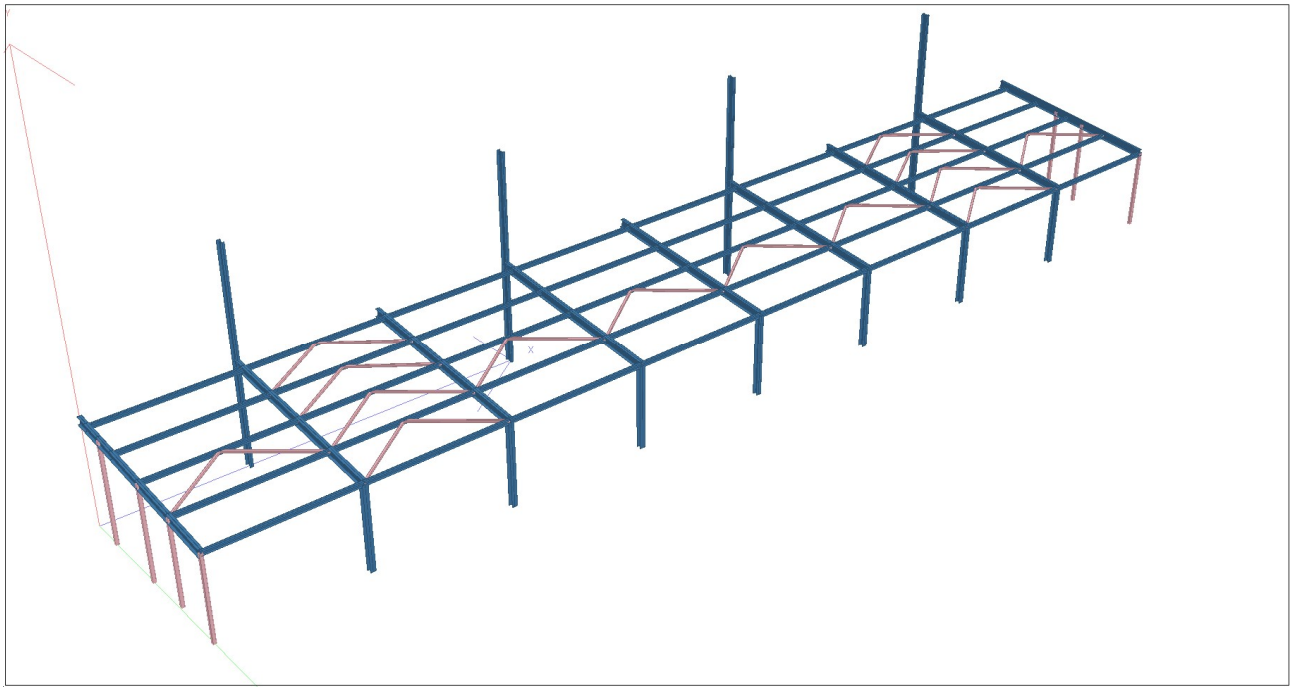
| | |
|---|---|
| Number of Basic Load Cases | 4 |
| Number of Combination Load Cases | 6 |

*Included in this printout are data for:*

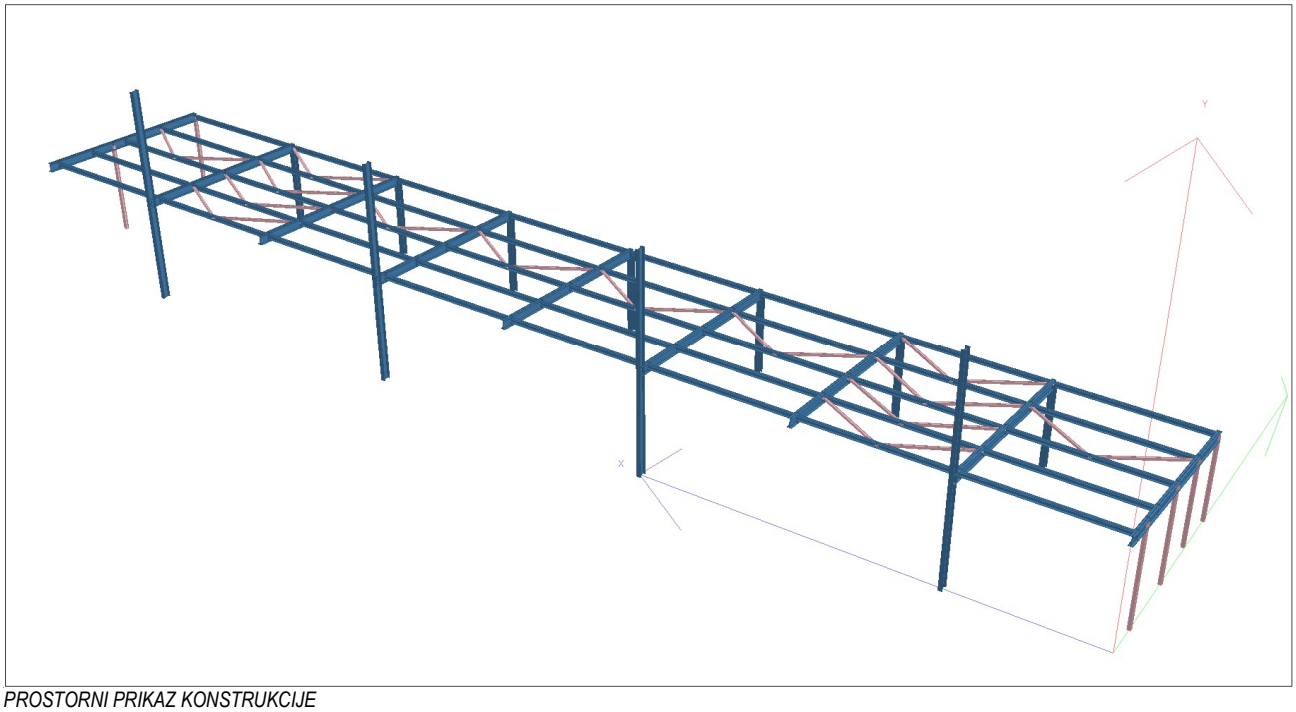
**All** The Whole Structure

*Included in this printout are results for load cases:*

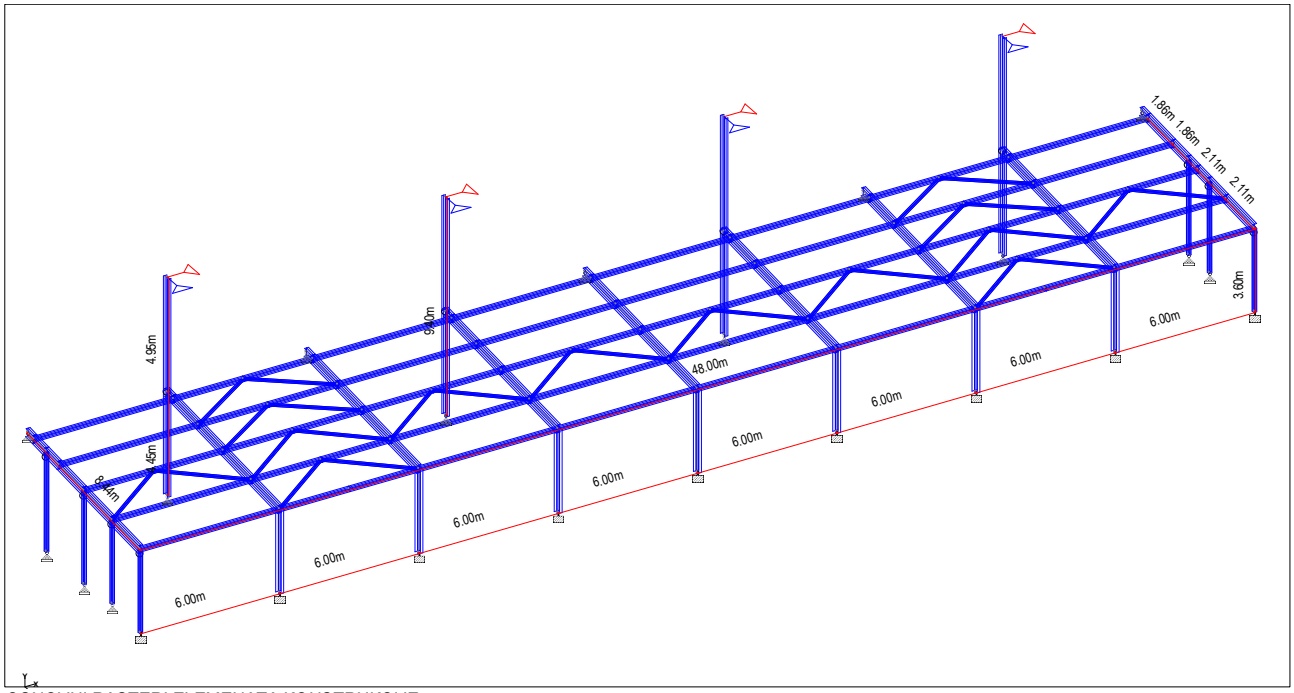
| Type | L/C | Name |
|---|---|---|
| Primary | 1 | STALNI TERET + VLASTITA TEZINA |
| Primary | 2 | SNIJEG |
| Primary | 3 | VJETAR -Z |
| Primary | 4 | VJETAR +X |
| Combination | 11 | 1+2 |
| Combination | 12 | 1+2+3 |
| Combination | 13 | 1+2+4 |
| Combination | 21 | 1.35*1+1.50*2 |
| Combination | 22 | 1.35*(1+2+3) |
| Combination | 23 | 1.35*(1+2+4) |



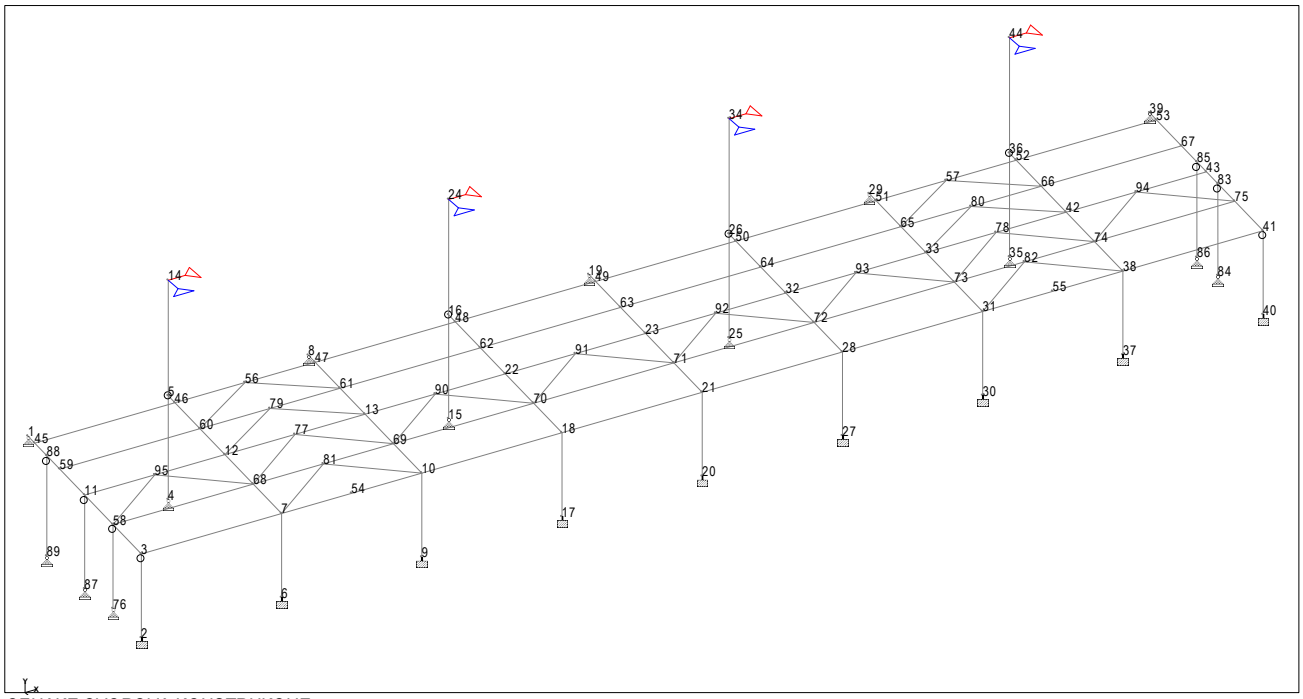
*PROSTORNI PRIKAZ KONSTRUKCIJE*



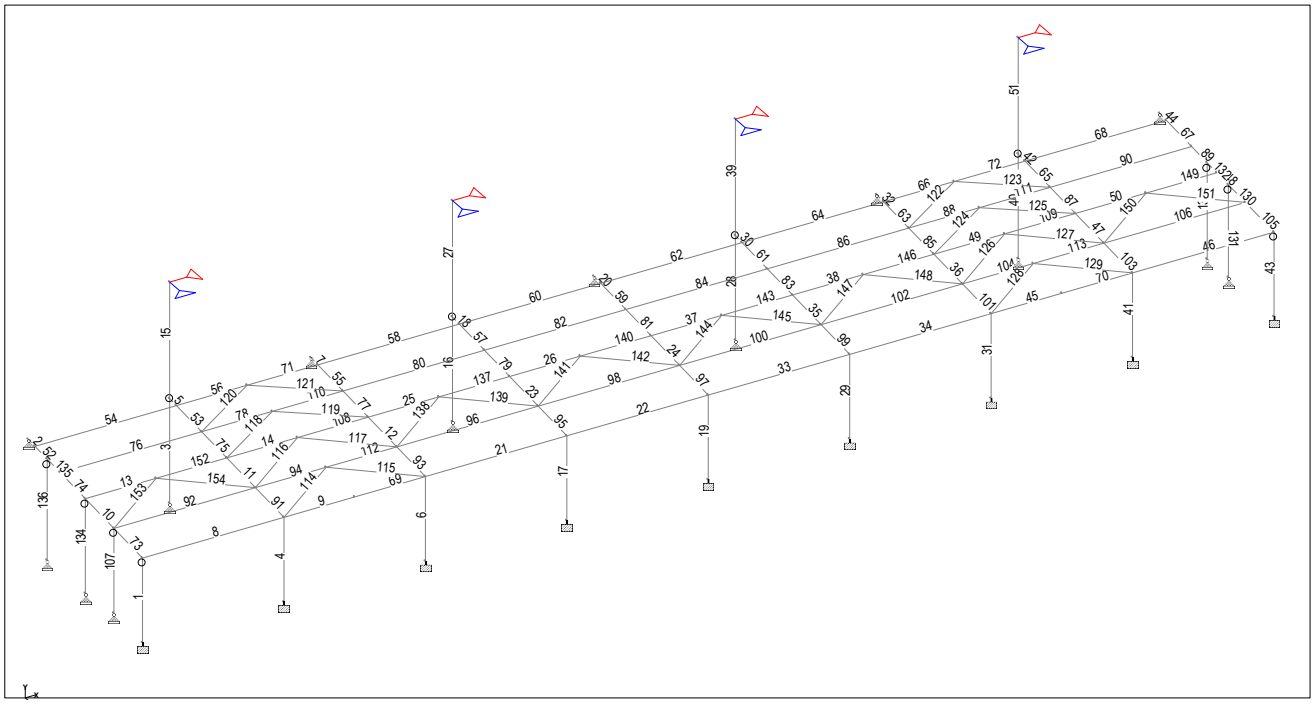
*PROSTORNI PRIKAZ KONSTRUKCIJE*



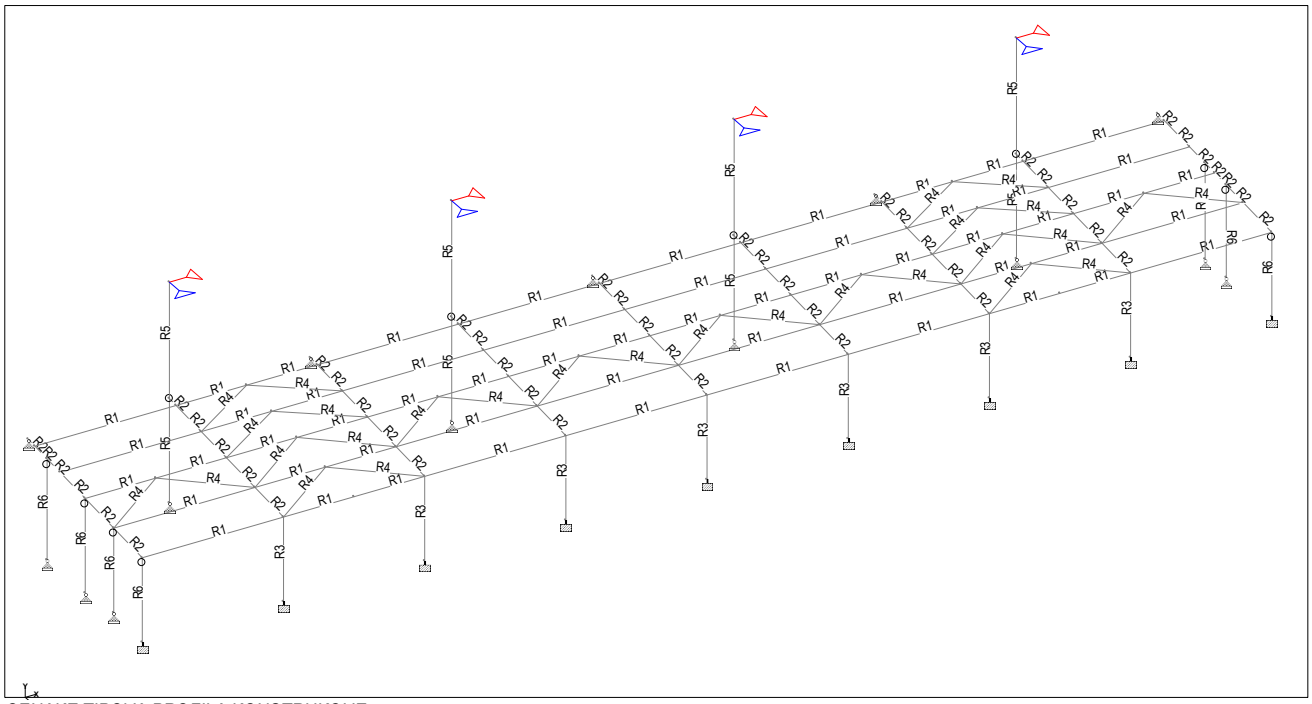

*OSNOVNI RASTERI ELEMENATA KONSTRUKCIJE*



*OZNAKE CVOROVA KONSTRUKCIJE*



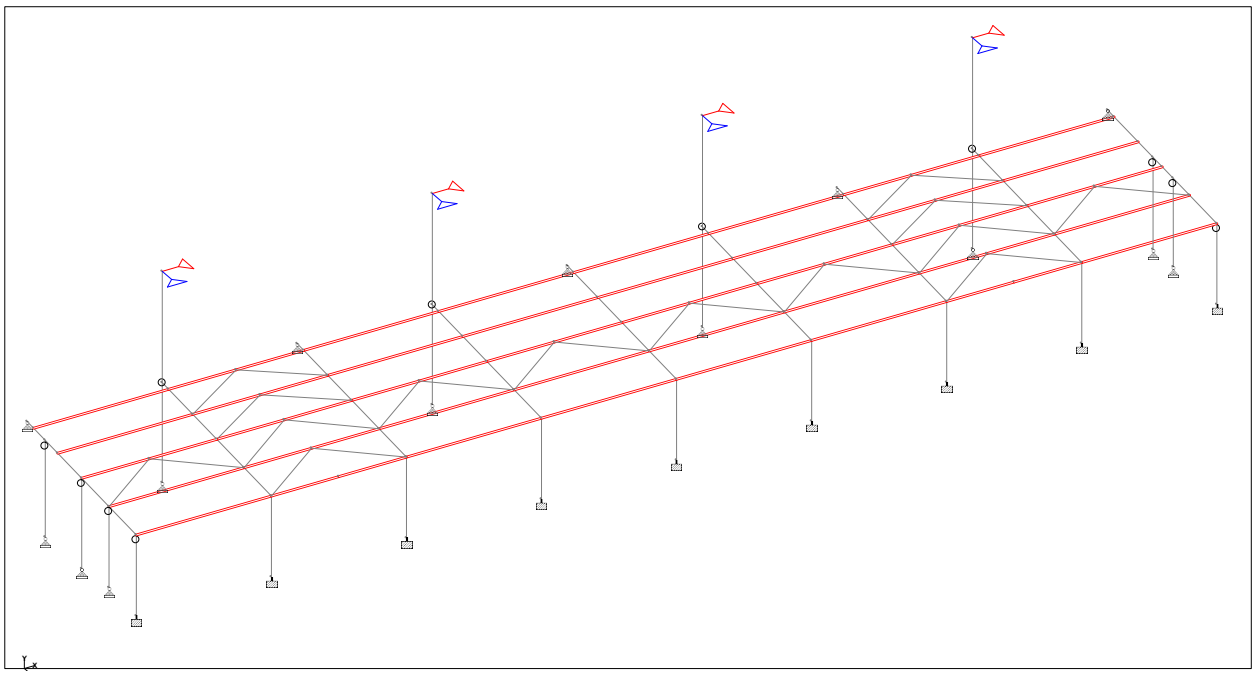
*OZNAKE ELEMENATA KONSTRUKCIJE*



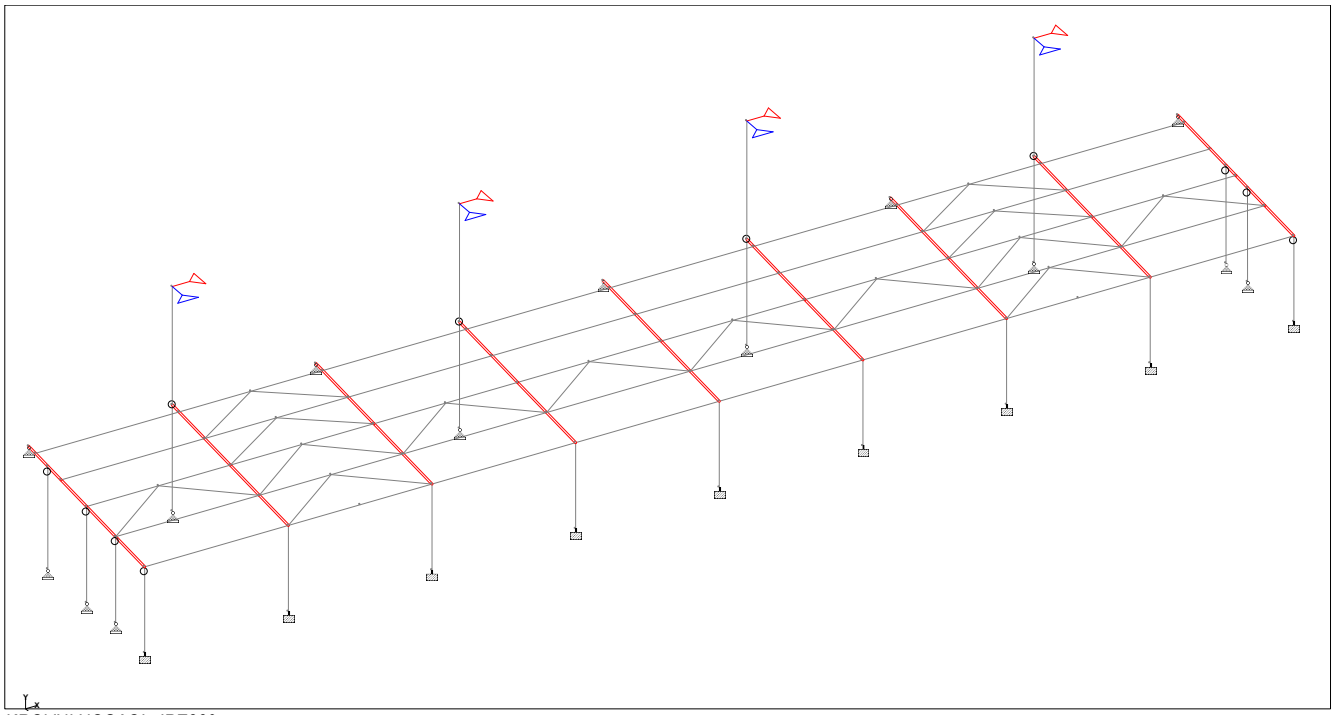
*OZNAKE TIPOVA PROFILA KONSTRUKCIJE*

## Profili

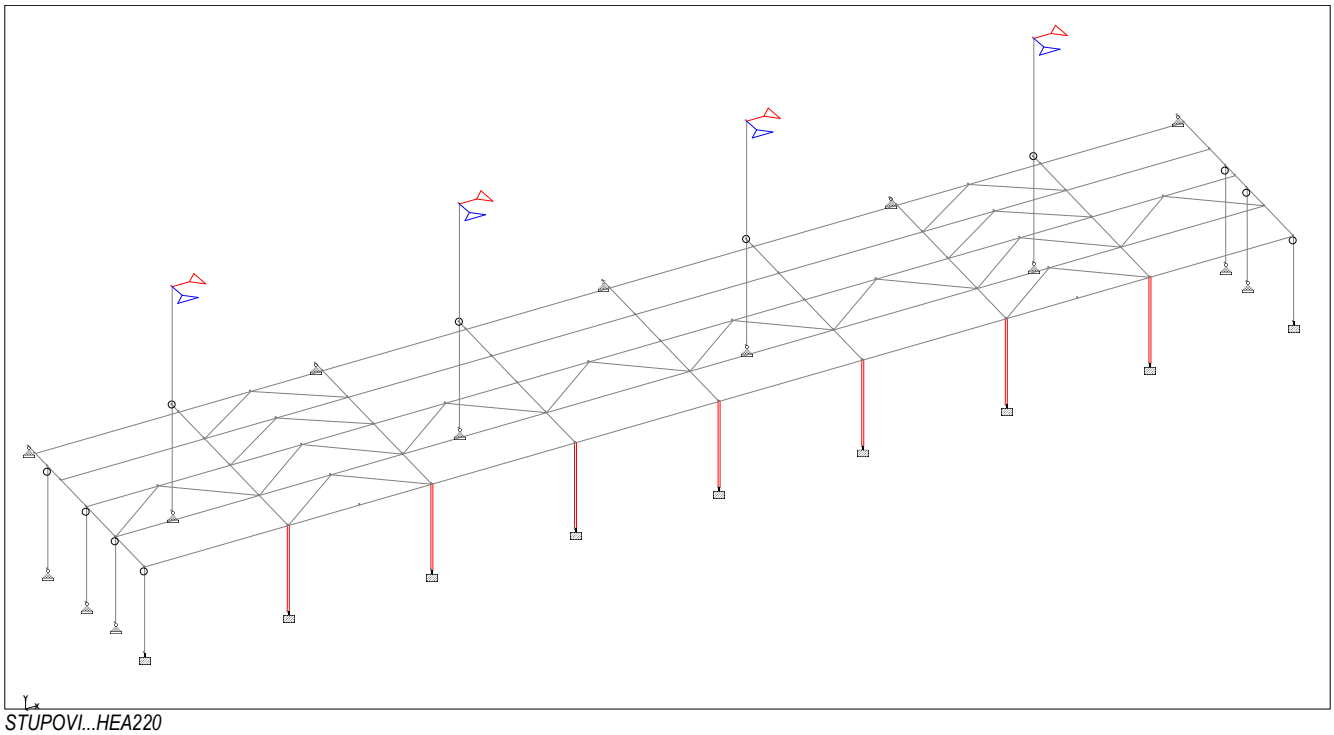
| Prop | Section | Area ($cm^2$) | $I_{yy}$ ($cm^4$) | $I_{zz}$ ($cm^4$) | J ($cm^4$) | Material |
|---|---|---|---|---|---|---|
| 1 | HE160A | 38.80 | 616.00 | 1673.00 | 12.20 | STEEL |
| 2 | IPE360 | 72.70 | 1043.00 | 16.3E 3 | 37.30 | STEEL |
| 3 | HE220A | 64.30 | 1955.00 | 5410.00 | 28.50 | STEEL |
| 4 | TUB80803 | 10.90 | 106.00 | 106.00 | 160.54 | STEEL |
| 5 | IPE300 | 53.80 | 604.00 | 8356.00 | 20.10 | STEEL |
| 6 | TUB1201205 | 22.90 | 503.00 | 503.00 | 760.44 | STEEL |



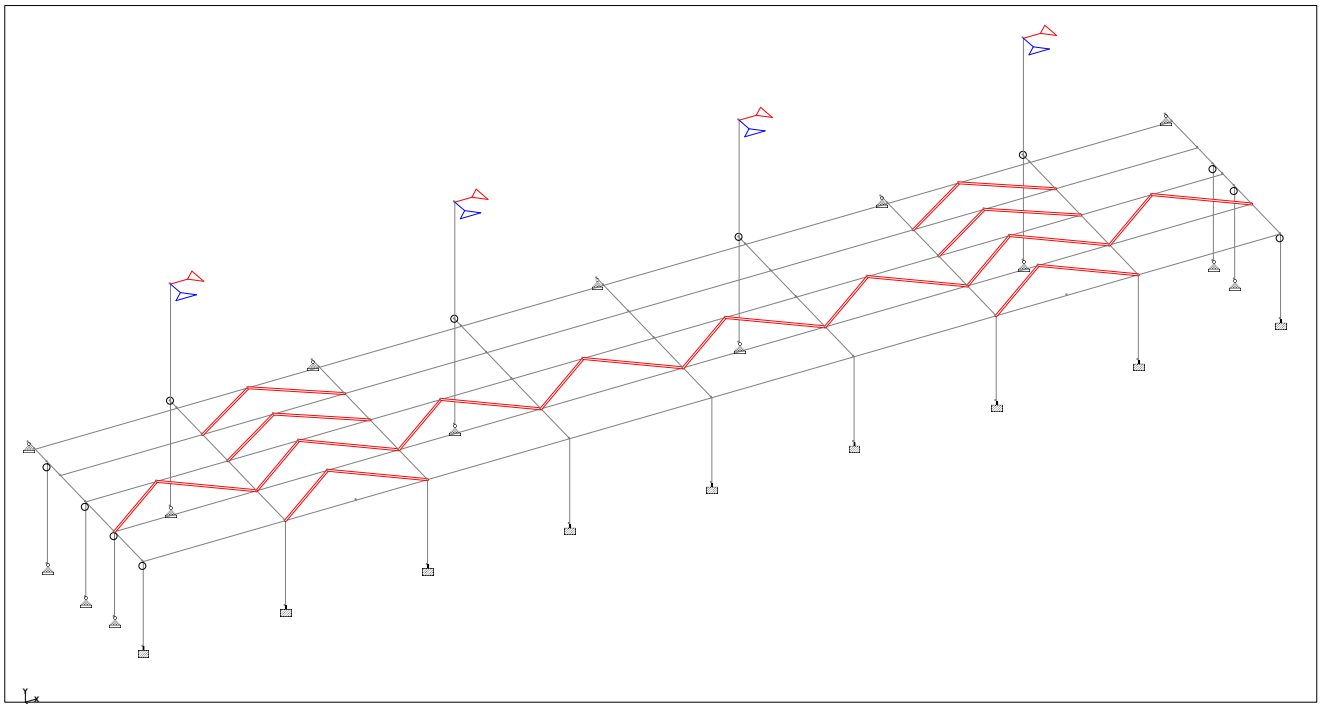
*PODROZNICE...HEA160*



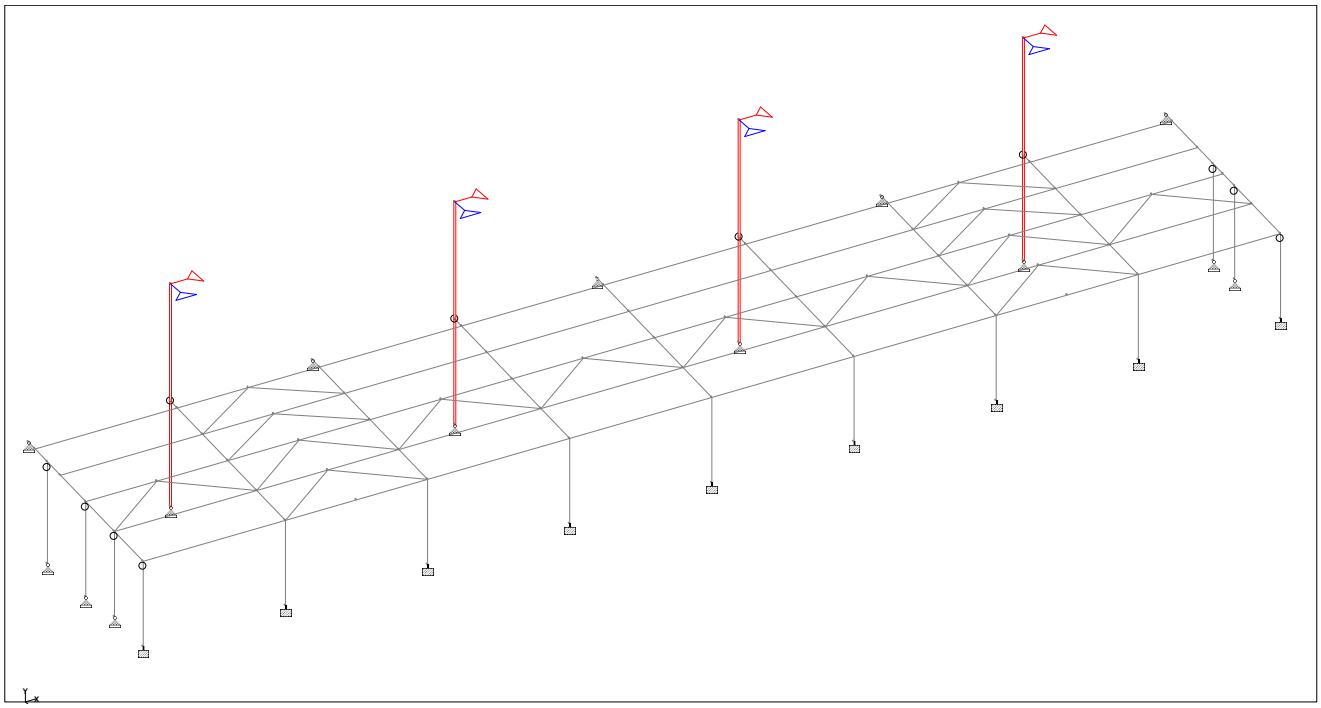
*KROVNI NOSACI...IPE360*



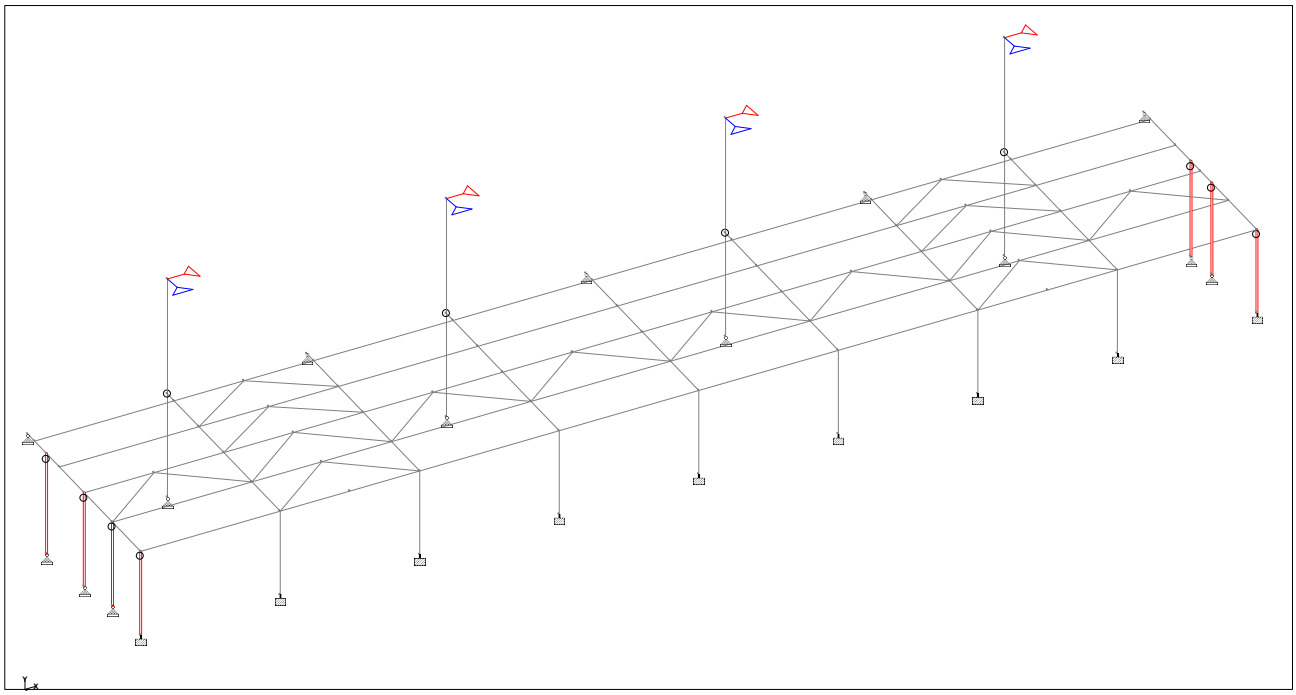
*STUPOVI...HEA220*



*KROVNA STABILIZACIJA...QC80x3*



*STUPOVI PROCELJA...IPE300*



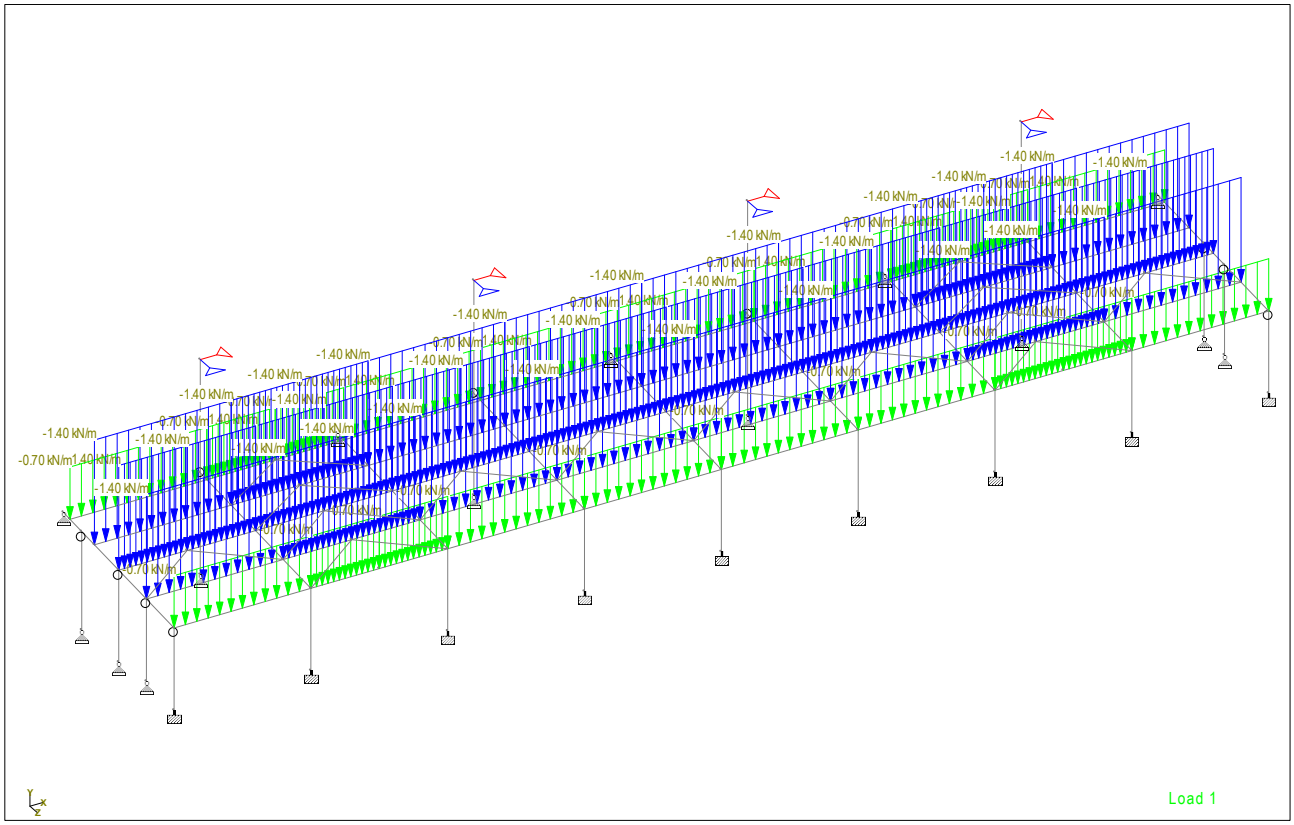
*ZABATNI STUPOVI...QC120x5*

## Oslonci

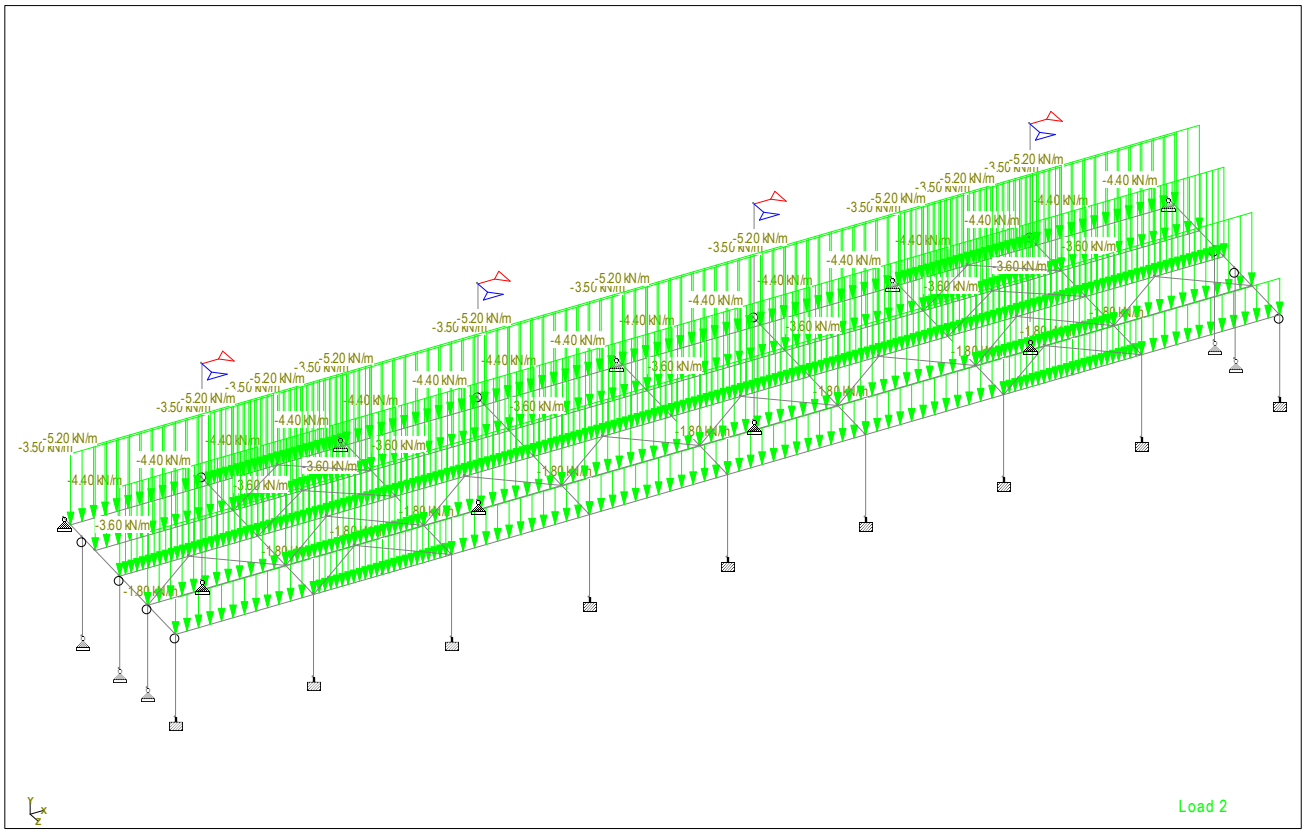
| Node | X (kN/mm) | Y (kN/mm) | Z (kN/mm) | rX (kN-m/deg) | rY (kN-m/deg) | rZ (kN-m/deg) |
|---|---|---|---|---|---|---|
| 1 | Fixed | Fixed | Fixed | - | - | - |
| 2 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 4 | Fixed | Fixed | Fixed | - | - | - |
| 6 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 8 | Fixed | Fixed | Fixed | - | - | - |
| 9 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 14 | Fixed | - | Fixed | - | - | - |
| 15 | Fixed | Fixed | Fixed | - | - | - |
| 17 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 19 | Fixed | Fixed | Fixed | - | - | - |
| 20 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 24 | Fixed | - | Fixed | - | - | - |
| 25 | Fixed | Fixed | Fixed | - | - | - |
| 27 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 29 | Fixed | Fixed | Fixed | - | - | - |
| 30 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 34 | Fixed | - | Fixed | - | - | - |
| 35 | Fixed | Fixed | Fixed | - | - | - |
| 37 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 39 | Fixed | Fixed | Fixed | - | - | - |
| 40 | Fixed | Fixed | Fixed | Fixed | Fixed | Fixed |
| 44 | Fixed | - | Fixed | - | - | - |
| 76 | Fixed | Fixed | Fixed | - | - | - |
| 84 | Fixed | Fixed | Fixed | - | - | - |
| 86 | Fixed | Fixed | Fixed | - | - | - |
| 87 | Fixed | Fixed | Fixed | - | - | - |
| 89 | Fixed | Fixed | Fixed | - | - | - |

## Osnovna opterećenja

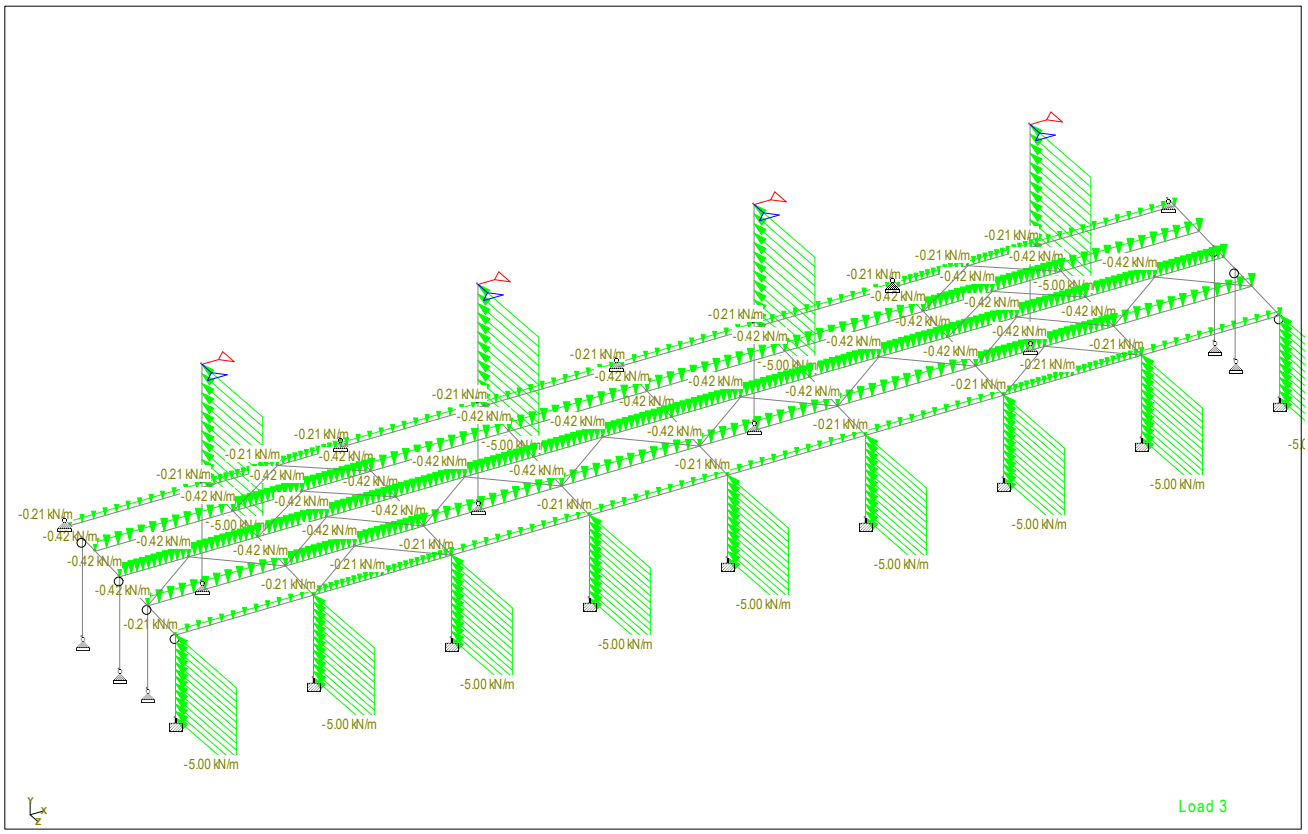
| Number | Name | Type |
|---|---|---|
| 1 | STALNI TERET + VLASTITA TEZINA | Dead |
| 2 | SNIJEG | Snow |
| 3 | VJETAR -Z | Wind |
| 4 | VJETAR +X | Wind |



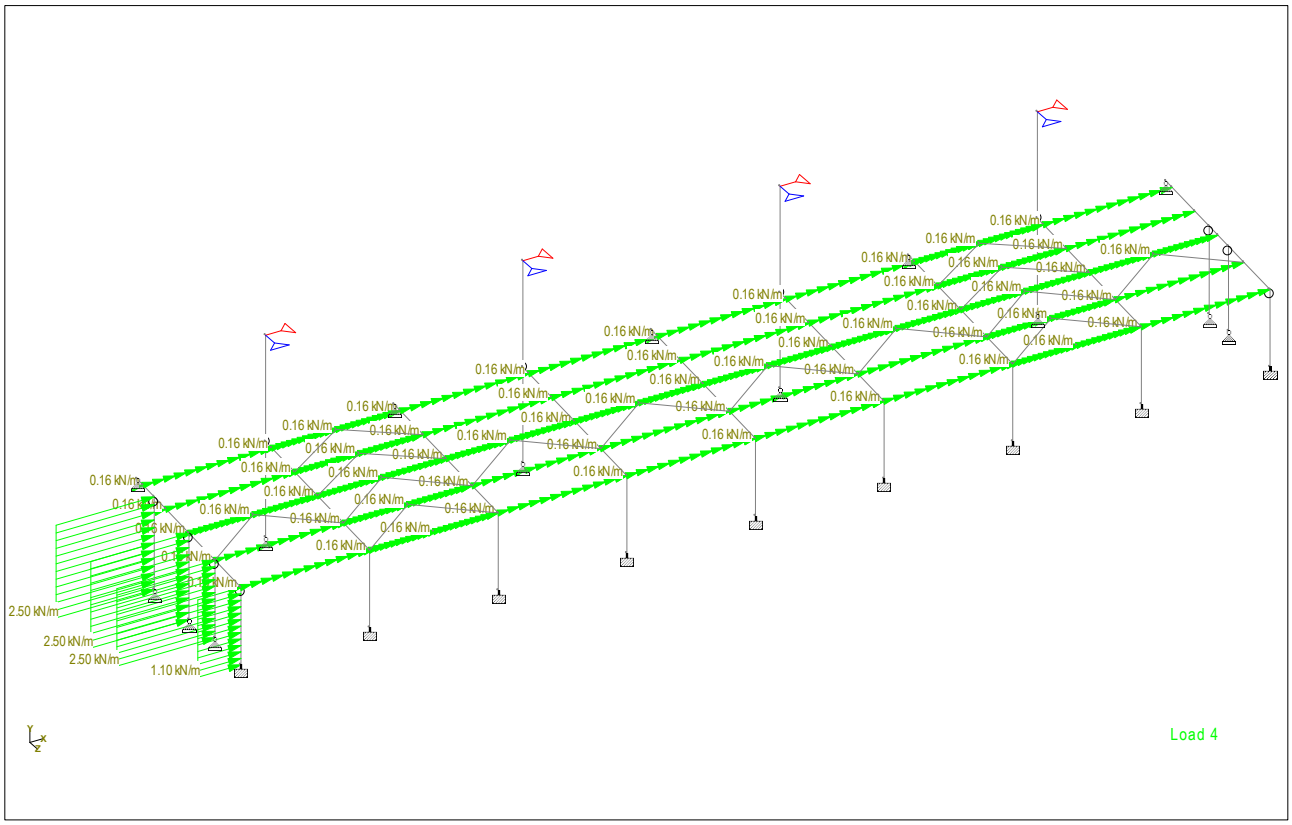

*OPTERECENJE 1 - STALNI TERET + VLASTITA TEZINA*




*OPTERECENJE 2 - SNIJEG (UKLJUCIVO GOMILANJE SNIJEGA)*




*OPTERECENJE 3 - VJETAR -Z*




*OPTERECENJE 4 - VJETAR +X*

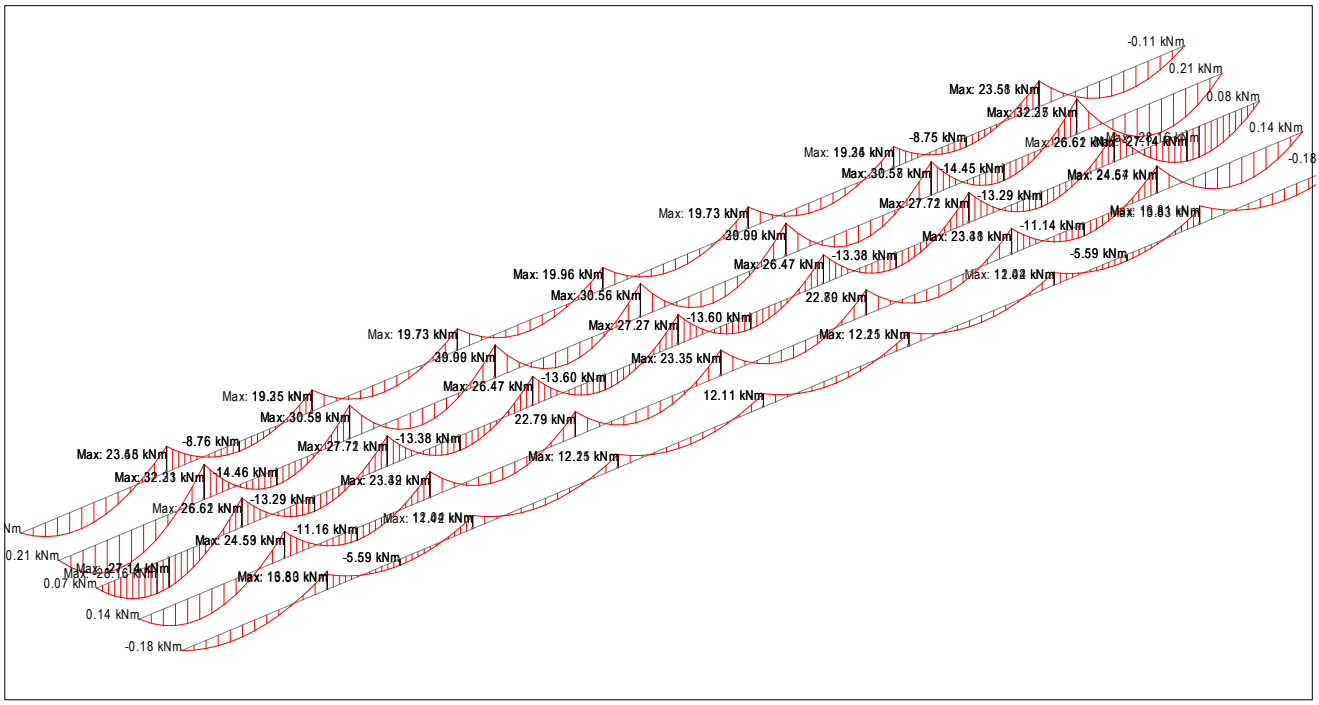
## Kombinacije opterećenja

| Comb. | Combination L/C Name | Primary | Primary L/C Name | Factor |
|---|---|---|---|---|
| 11 | 1+2 | 1 | STALNI TERET + VLASTITA TEZINA | 1.00 |
| | | 2 | SNIJEG | 1.00 |
| 12 | 1+2+3 | 1 | STALNI TERET + VLASTITA TEZINA | 1.00 |
| | | 2 | SNIJEG | 1.00 |
| | | 3 | VJETAR -Z | 1.00 |
| 13 | 1+2+4 | 1 | STALNI TERET + VLASTITA TEZINA | 1.00 |
| | | 2 | SNIJEG | 1.00 |
| | | 4 | VJETAR +X | 1.00 |
| 21 | 1.35*1+1.50*2 | 1 | STALNI TERET + VLASTITA TEZINA | 1.35 |
| | | 2 | SNIJEG | 1.50 |
| 22 | 1.35*(1+2+3) | 1 | STALNI TERET + VLASTITA TEZINA | 1.35 |
| | | 2 | SNIJEG | 1.35 |
| | | 3 | VJETAR -Z | 1.35 |
| 23 | 1.35*(1+2+4) | 1 | STALNI TERET + VLASTITA TEZINA | 1.35 |
| | | 2 | SNIJEG | 1.35 |
| | | 4 | VJETAR +X | 1.35 |

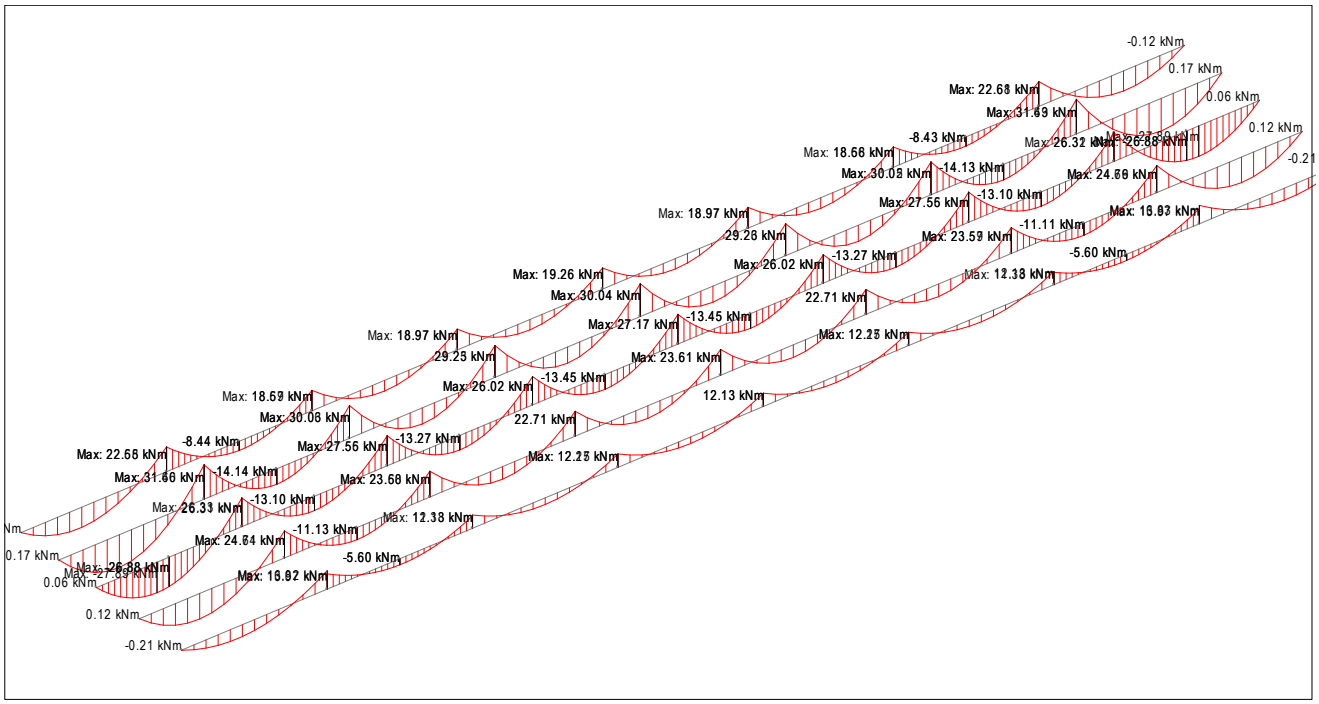
## Maksimalne sile po tipovima profila

| Section | | Axial | Shear | | Torsion | Bending | |
|---|---|---|---|---|---|---|---|
| | | Max Fx (kN) | Max Fy (kN) | Max Fz (kN) | Max Mx (kNm) | Max My (kNm) | Max Mz (kNm) |
| HE160A | Max +ve | 40.436 | 35.636 | 0.846 | 0.03 | 2.21 | 32.37 |
| | Max -ve | -62.528 | -35.631 | -1.429 | -0.03 | -3.14 | -30.56 |
| IPE360 | Max +ve | 139.594 | 119.992 | 19.039 | 0.17 | 9.52 | 119.43 |
| | Max -ve | -30.279 | -105.500 | -6.790 | -0.17 | -3.21 | -212.01 |
| HE220A | Max +ve | 141.147 | 10.477 | 1.149 | 0.00 | 4.50 | 119.41 |

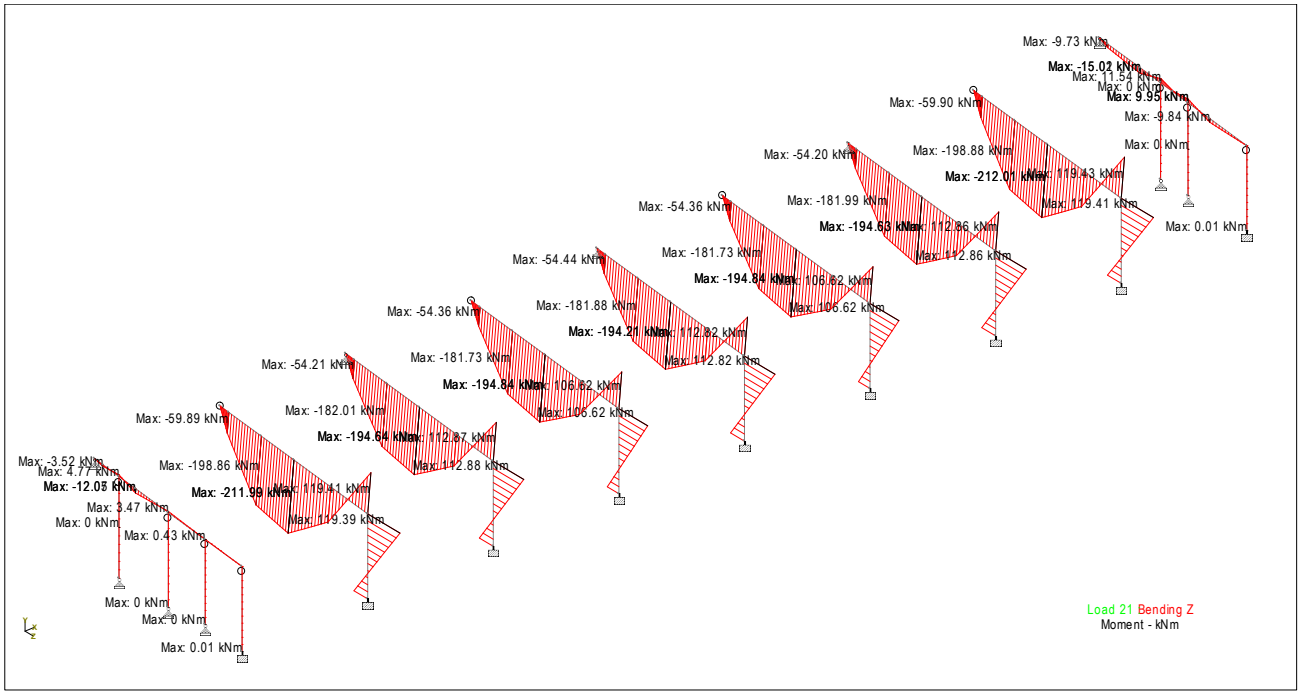
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Max -ve | -0.036 | -55.643 | -2.660 | -0.00 | -5.07 | -51.53 |
| TUB80803 | Max +ve | 61.494 | 0.207 | 0.000 | 0.00 | 0.00 | 0.00 |
| | Max -ve | -59.560 | -0.207 | 0.000 | 0.00 | 0.00 | 0.00 |
| IPE300 | Max +ve | 125.664 | 17.475 | 0.044 | 0.00 | 0.08 | 5.77 |
| | Max -ve | -0.065 | -16.643 | -0.049 | -0.00 | -0.22 | -20.52 |
| TUB1201205 | Max +ve | 38.467 | 15.188 | 7.272 | 0.06 | 2.92 | 10.94 |
| | Max -ve | -0.101 | -9.113 | -7.272 | -0.08 | -7.83 | -6.08 |



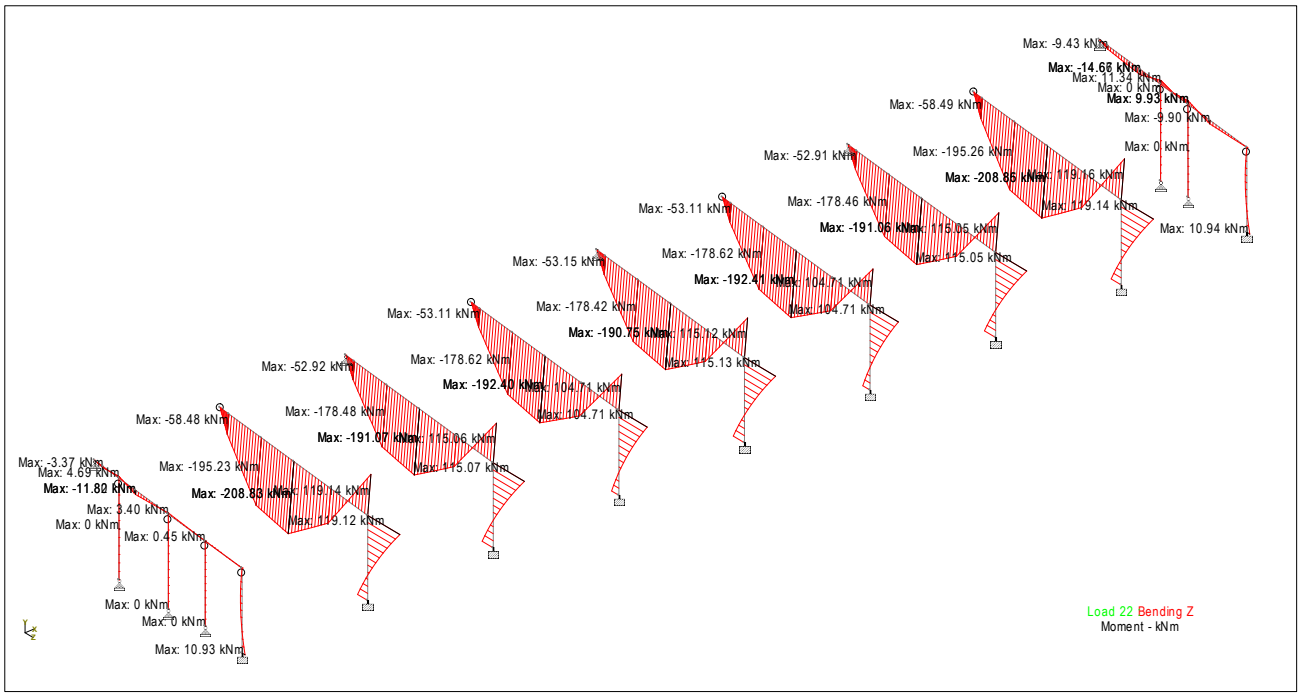

*PODROZNICE - MOMENTI SAVIJANJA ZA KOMB. OPT. 21*



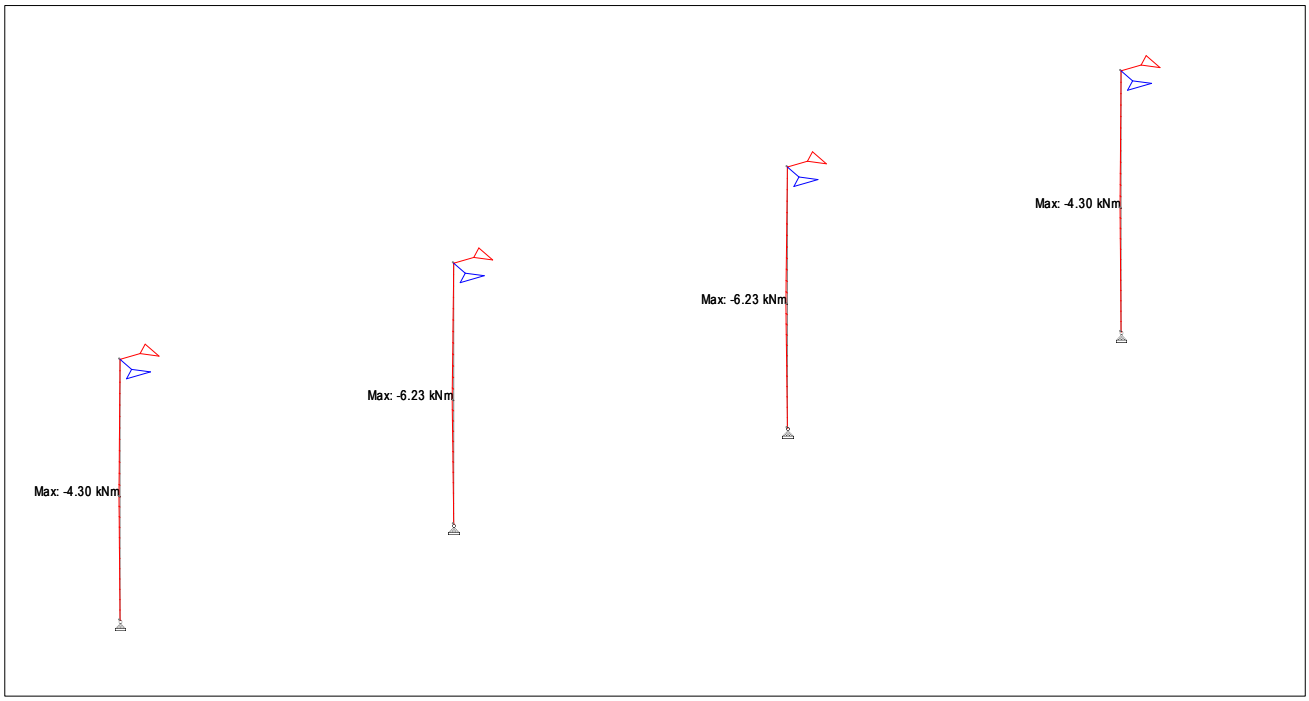

*PODROZNICE - MOMENTI SAVIJANJA ZA KOMB. OPT. 21*



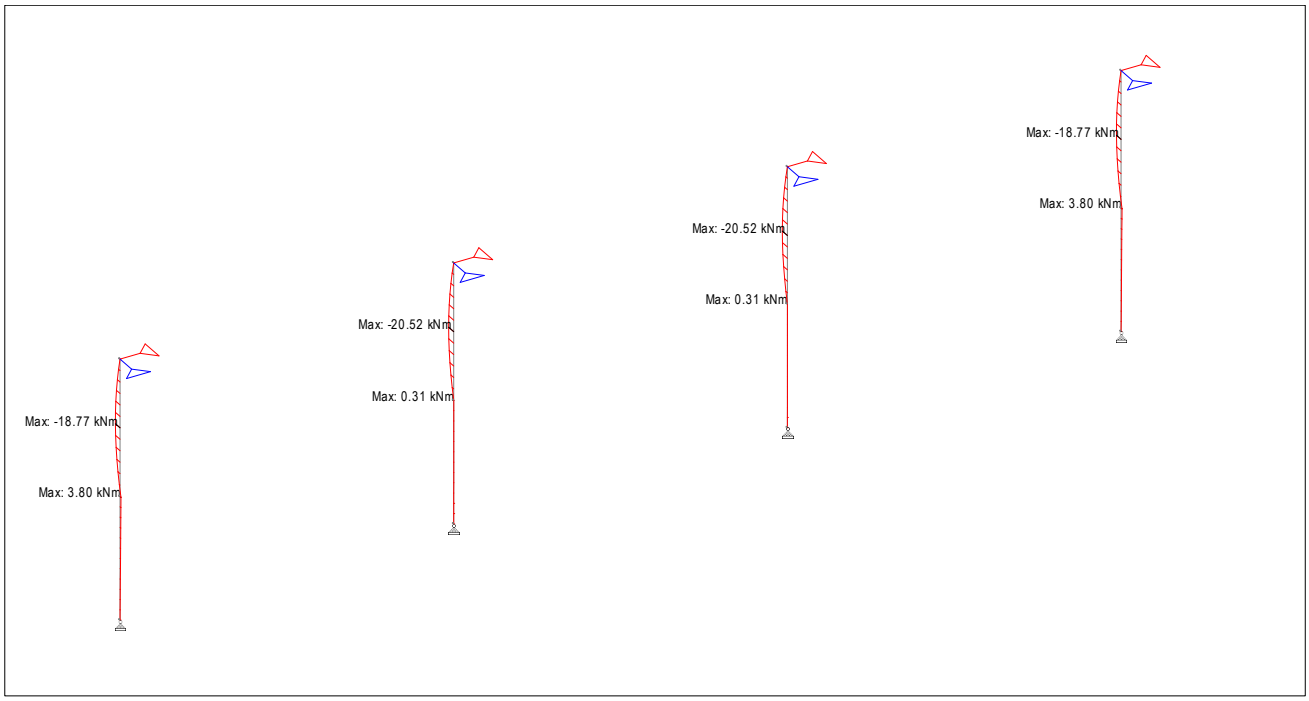

*OKVIRI - MOMENTI SAVIJANJA ZA KOMB. OPT. 21*



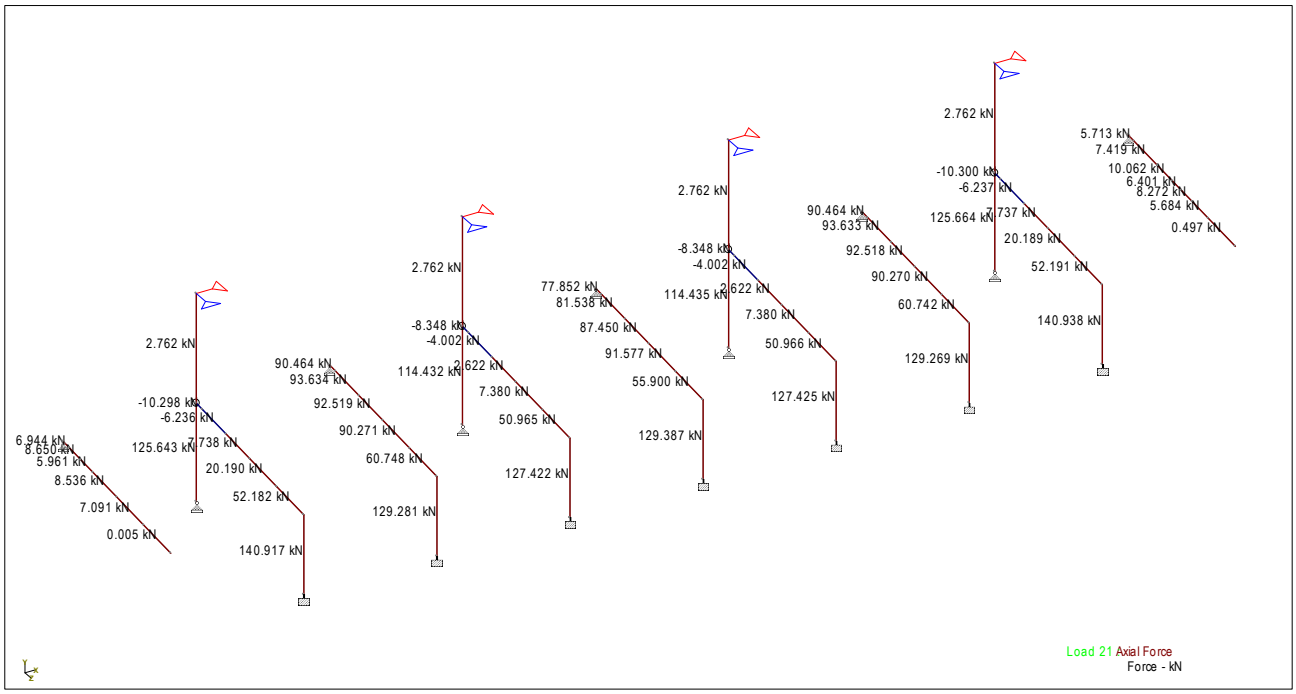

*OKVIRI - MOMENTI SAVIJANJA ZA KOMB. OPT. 22*



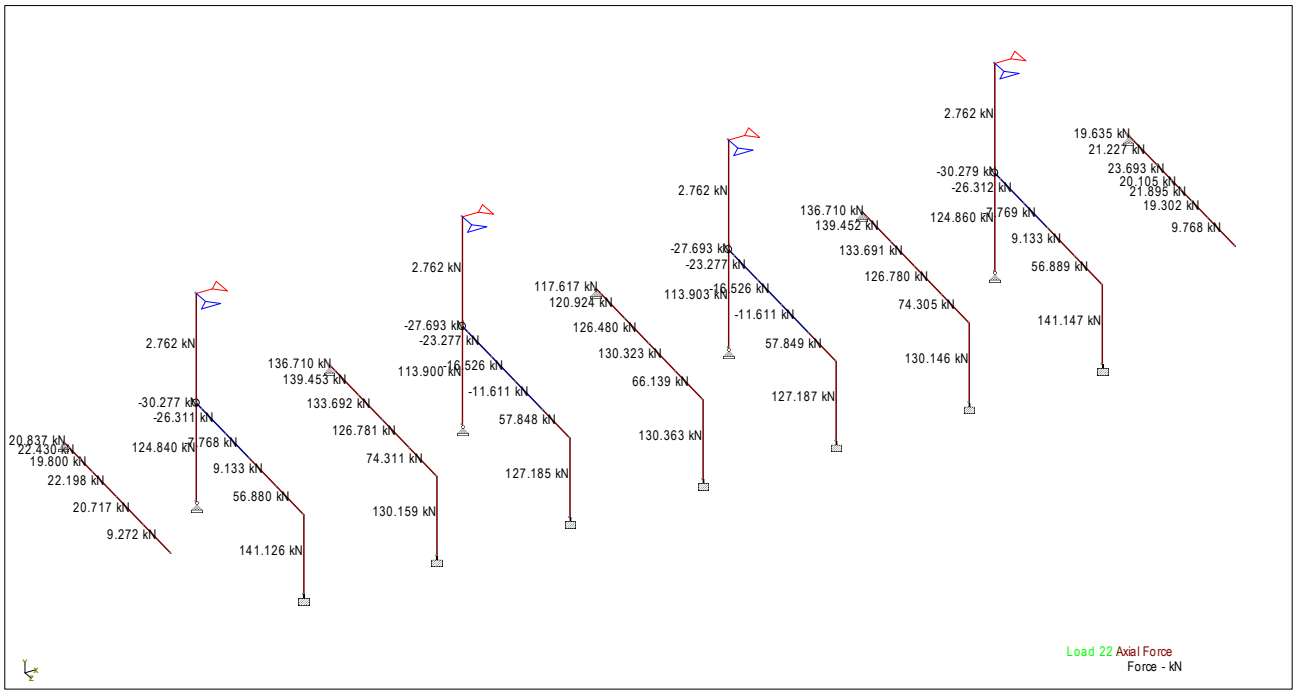

*STUPOVI PROCELJA - MOMENTI SAVIJANJA ZA KOMB. OPT. 21*



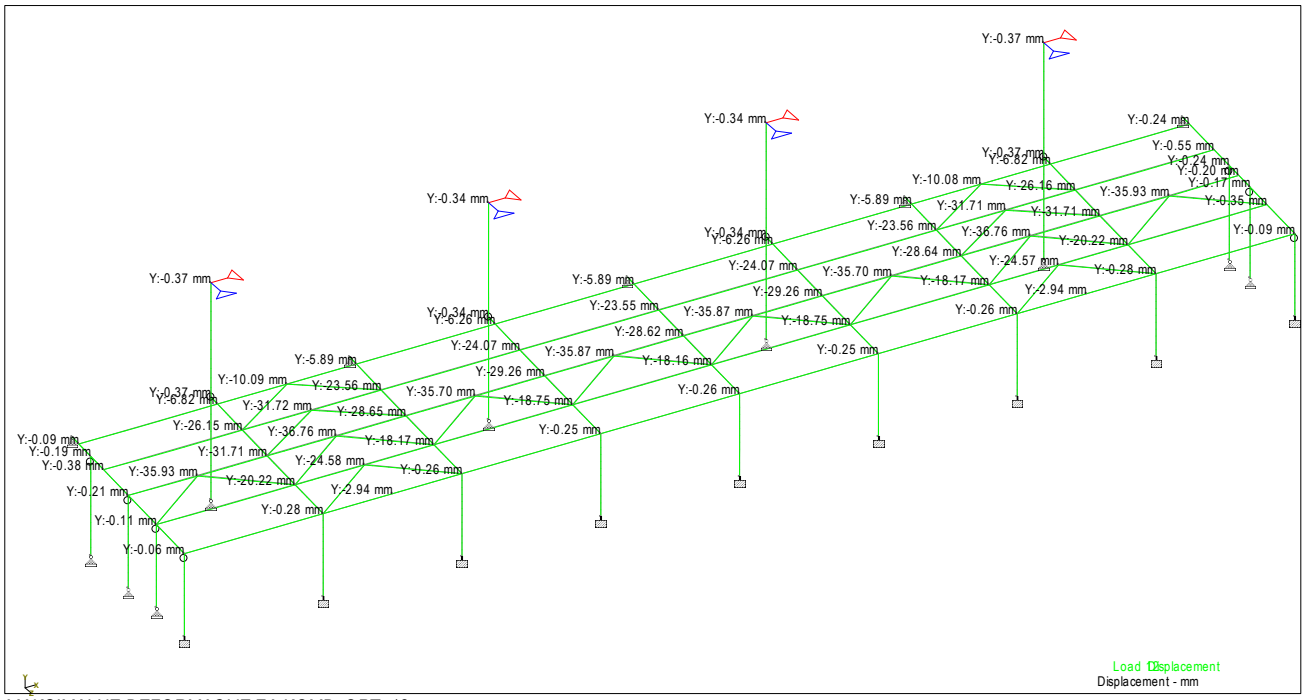

*STUPOVI PROCELJA - MOMENTI SAVIJANJA ZA KOMB. OPT. 22*



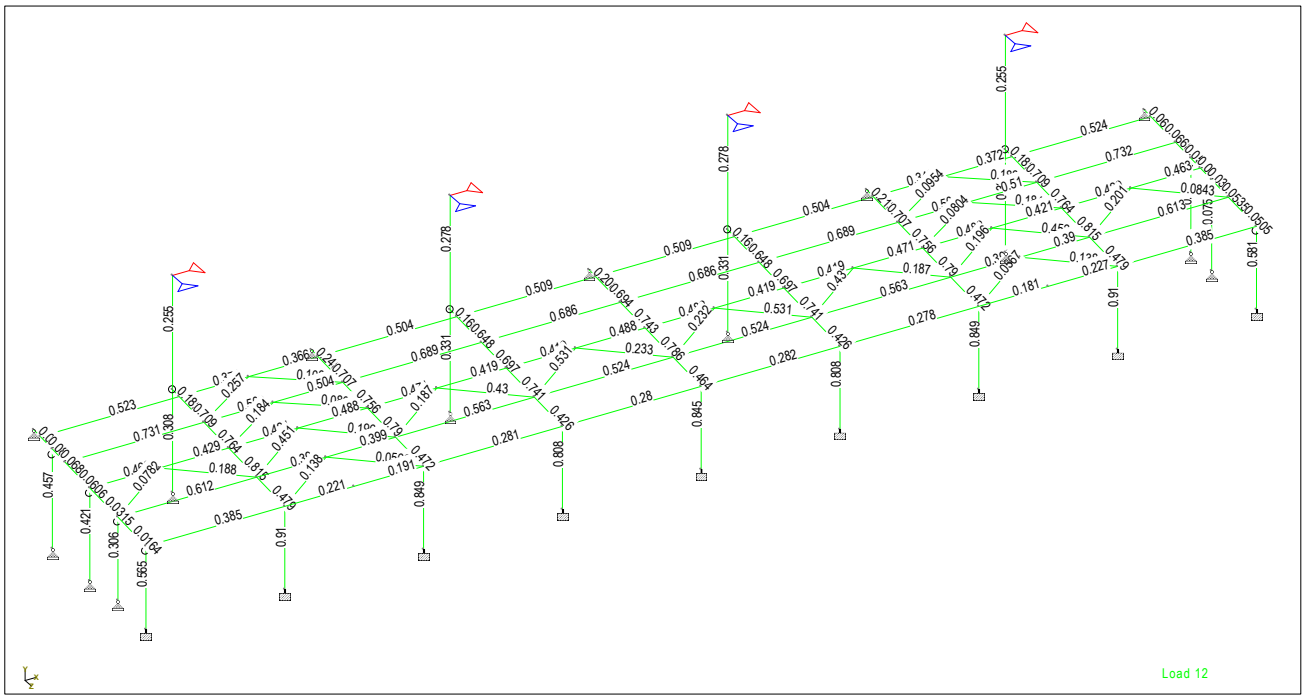

*OKVIRI - UZDUNE SILE ZA KOMB. OPT. 21*




*OKVIRI - UZDUNE SILE ZA KOMB. OPT. 22*




*MAKSIMALNE DEFORMACIJE ZA KOMB. OPT. 12*




*REZULTATI DIMENZIONIRANJA*

## Dimenzioniranje elementa 4 – stup HEA220

```
ALL UNITS ARE - KN   METE (UNLESS OTHERWISE NOTED)
MEMBER    TABLE      RESULT/  CRITICAL COND/    RATIO/    LOADING/
                       FX         MY          MZ      LOCATION
=========================================================================
    4 ST   HE220A     (EUROPEAN SECTIONS)
                  PASS    EC-6.3.3-662      0.910       21
               138.52 C        2.94       -119.39       3.60
=========================================================================
 MATERIAL DATA
   Grade of steel         = S 355
   Modulus of elasticity   = 205 kN/mm2
   Design Strength  (py)   = 355  N/mm2

 SECTION PROPERTIES (units - cm)
   Member Length =   360.00
   Gross Area =   64.30         Net Area =   64.30

                              z-axis        y-axis
   Moment of inertia       :    5410.000       1955.000
   Plastic modulus         :     568.000        271.000
   Elastic modulus         :     515.238        177.727
   Shear Area              :    32.266         20.630
   Radius of gyration      :      9.173          5.514
   Effective Length        :     360.000        550.000

 DESIGN DATA (units - kN,m)   EUROCODE NO.3 /2005
   Section Class           :  CLASS 2
   Squash Load             :  2282.65
   Axial force/Squash load  :    0.061
   GM0 :  1.00         GM1 :  1.10         GM2 :  1.25

                              z-axis        y-axis
   Slenderness ratio (KL/r) :       39.2          99.7
   Compression Capacity    :      1822.2         802.0
   Tension Capacity        :      2268.5        2268.5
   Moment Capacity         :       201.6          96.2
   Reduced Moment Capacity  :       201.6          96.2
   Shear Capacity          :       661.3         422.8

 BUCKLING CALCULATIONS (units - kN,m)
   Lateral Torsional Buckling Moment       MB =  150.0
   co-efficients C1 & K : C1 =1.132 K =1.0, Effective Length= 3.600

 CRITICAL LOADS FOR EACH CLAUSE CHECK (units- kN,m):
  CLAUSE       RATIO  LOAD    FX      VY      VZ      MZ      MY
EC-6.3.1.1     0.176    22   141.1    -31.3    -1.0   -37.3     1.0
EC-6.2.9.1     0.592    21   138.5     47.3     1.1  -119.4     2.9
EC-6.3.3-661   0.437    21   138.5     47.3     1.1  -119.4     2.9
EC-6.3.3-662   0.910    21   138.5     47.3     1.1  -119.4     2.9
EC-6.2.5       0.026     4     0.0     -0.9    -1.2    -1.9     2.5
EC-6.2.6-(Z)   0.004    23   131.3    -45.1    -2.7   -49.9     4.5
EC-6.2.6-(Y)   0.132    22   138.7     55.6     1.0  -119.1     2.8
EC-6.3.2 LTB   0.796    21   138.5     47.3     1.1  -119.4     2.9
 Torsion and deflections have not been considered in the design.
```

## Dimenzioniranje elementa 11 – krovni nosač IPE360

```
ALL UNITS ARE - KN   METE (UNLESS OTHERWISE NOTED)
MEMBER    TABLE      RESULT/  CRITICAL COND/    RATIO/    LOADING/
                       FX          MY          MZ      LOCATION
=========================================================================
    11 ST   IPE360     (EUROPEAN SECTIONS)
                    PASS    EC-6.3.3-662      0.815       21
                20.19 C       -0.54       -211.99       0.00
=========================================================================
 MATERIAL DATA
    Grade of steel          = S 355
    Modulus of elasticity   = 205 kN/mm2
    Design Strength  (py)   = 355  N/mm2

 SECTION PROPERTIES (units - cm)
    Member Length =   211.07
    Gross Area =   72.70         Net Area =   72.70

                               z-axis        y-axis
    Moment of inertia       :   16270.002       1043.000
    Plastic modulus         :    1019.000        191.000
    Elastic modulus         :     903.889        122.706
    Shear Area              :      28.786         35.108
    Radius of gyration      :      14.960          3.788
    Effective Length        :     211.072        211.072

 DESIGN DATA (units - kN,m)   EUROCODE NO.3 /2005
    Section Class           :  CLASS 1
    Squash Load             :  2580.85
    Axial force/Squash load :    0.008
    GM0 :  1.00         GM1 :  1.10         GM2 :  1.25

                               z-axis        y-axis
    Slenderness ratio (KL/r) :       14.1          55.7
    Compression Capacity     :     2346.2        1799.2
    Tension Capacity         :     2564.9        2564.9
    Moment Capacity          :      361.7          67.8
    Reduced Moment Capacity  :      361.7          67.8
    Shear Capacity           :      590.0         719.6

 BUCKLING CALCULATIONS (units - kN,m)
    Lateral Torsional Buckling Moment       MB =  264.7
    co-efficients C1 & K : C1 =1.132 K =1.0, Effective Length= 2.111

 CRITICAL LOADS FOR EACH CLAUSE CHECK (units- kN,m):
  CLAUSE        RATIO  LOAD     FX      VY      VZ      MZ      MY
 EC-6.2.3 (T)   0.003    3    -7.1    -2.2     0.3    -9.0    -0.3
 EC-6.3.1.1     0.017   23    31.1    -47.9    0.1   -195.9    -0.2
 EC-6.2.9.1     0.586   21    20.2    -51.5    0.4   -212.0    -0.5
 EC-6.3.3-661   0.646   21    20.2    -51.5    0.4   -212.0    -0.5
 EC-6.3.3-662   0.815   21    20.2    -51.5    0.4   -212.0    -0.5
 EC-6.2.6-(Z)   0.001   22     9.1    -50.6    0.8   -208.8    -0.9
 EC-6.2.6-(Y)   0.074   21    20.3     53.1    -0.4   101.5    -0.4
 EC-6.3.2 LTB   0.801   21    20.2    -51.5    0.4   -212.0    -0.5
  Torsion and deflections have not been considered in the design.
```

## Dimenzioniranje elementa 43 – stup QC120x5

ALL UNITS ARE - KN METE (UNLESS OTHERWISE NOTED)
MEMBER TABLE RESULT/ CRITICAL COND/ RATIO/ LOADING/
FX MY MZ LOCATION
==========
43 ST TUB1201205 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.581 22
16.64 C 0.10 10.94 0.00
==========

MATERIAL DATA
Grade of steel = S 235
Modulus of elasticity = 205 kN/mm2
Design Strength (py) = 235 N/mm2

SECTION PROPERTIES (units - cm)
Member Length = 360.00
Gross Area = 22.90 Net Area = 22.90

| | z-axis | y-axis |
|---|---|---|
| Moment of inertia | 503.000 | 503.000 |
| Plastic modulus | 97.600 | 97.600 |
| Elastic modulus | 83.833 | 83.833 |
| Shear Area | 11.450 | 11.450 |
| Radius of gyration | 4.687 | 4.687 |
| Effective Length | 360.000 | 550.000 |

DESIGN DATA (units - kN,m) EUROCODE NO.3 /2005
Section Class : CLASS 1
Squash Load : 538.15
Axial force/Squash load : 0.031
GM0 : 1.00 GM1 : 1.10 GM2 : 1.25

| | z-axis | y-axis |
|---|---|---|
| Slenderness ratio (KL/r) | 76.8 | 117.4 |
| Compression Capacity | 384.2 | 244.3 |
| Tension Capacity | 538.2 | 538.2 |
| Moment Capacity | 22.9 | 22.9 |
| Reduced Moment Capacity | 22.9 | 22.9 |
| Shear Capacity | 155.4 | 155.4 |

BUCKLING CALCULATIONS (units - kN,m)
Lateral Torsional Buckling Moment MB = 20.9
co-efficients C1 & K : C1 =1.132 K =1.0, Effective Length= 3.600

CRITICAL LOADS FOR EACH CLAUSE CHECK (units- kN,m):

| CLAUSE | RATIO | LOAD | FX | VY | VZ | MZ | MY |
|---|---|---|---|---|---|---|---|
| EC-6.3.1.1 | 0.068 | 22 | 16.6 | 15.2 | -0.0 | 10.9 | 0.1 |
| EC-6.2.9.1 | 0.477 | 22 | 16.6 | 15.2 | -0.0 | 10.9 | 0.1 |
| EC-6.3.3-661 | 0.314 | 22 | 16.6 | 15.2 | -0.0 | 10.9 | 0.1 |
| EC-6.3.3-662 | 0.581 | 22 | 16.6 | 15.2 | -0.0 | 10.9 | 0.1 |
| EC-6.2.6-(Z) | 0.001 | 23 | 14.9 | 0.0 | -0.2 | 0.0 | 0.6 |
| EC-6.2.6-(Y) | 0.098 | 22 | 16.6 | 15.2 | -0.0 | 10.9 | 0.1 |

Details of torsion design given in .anl file output.

## Dimenzioniranje elementa 76 – podrožnica HEA160

```
ALL UNITS ARE - KN   METE (UNLESS OTHERWISE NOTED)
MEMBER    TABLE      RESULT/  CRITICAL COND/    RATIO/    LOADING/
                FX         MY          MZ      LOCATION
=========================================================================
   76 ST   HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.731       21
              0.30 C       -0.48       -32.33       6.00
=========================================================================
 MATERIAL DATA
   Grade of steel         = S 355
   Modulus of elasticity   = 205 kN/mm2
   Design Strength  (py)   = 355  N/mm2

 SECTION PROPERTIES (units - cm)
   Member Length =   600.00
   Gross Area =   38.80        Net Area =   38.80

                           z-axis        y-axis
   Moment of inertia       :    1673.000       616.000
   Plastic modulus         :     245.000       118.000
   Elastic modulus         :     220.132        77.000
   Shear Area              :      19.200        13.240
   Radius of gyration      :       6.566         3.985
   Effective Length        :     600.000       600.000

 DESIGN DATA (units - kN,m)   EUROCODE NO.3 /2005
   Section Class           :  CLASS 1
   Squash Load             :  1377.40
   Axial force/Squash load :    0.000
   GM0 :  1.00         GM1 :  1.10         GM2 :  1.25

                           z-axis        y-axis
   Slenderness ratio (KL/r) :       91.4         150.6
   Compression Capacity    :       601.4         251.9
   Tension Capacity        :      1368.9        1368.9
   Moment Capacity         :        87.0          41.9
   Reduced Moment Capacity :        87.0          41.9
   Shear Capacity          :       393.5         271.4

 BUCKLING CALCULATIONS (units - kN,m)
   Lateral Torsional Buckling Moment      MB =   45.0
   co-efficients C1 & K : C1 =1.132 K =1.0, Effective Length= 6.000

 CRITICAL LOADS FOR EACH CLAUSE CHECK (units- kN,m):
  CLAUSE       RATIO  LOAD     FX      VY      VZ      MZ      MY
EC-6.3.1.1     0.038   23     9.7     32.9     0.1   -29.8    -0.1
EC-6.2.9.1     0.372   21     0.3     35.6    -0.0   -32.3    -0.5
EC-6.3.3-661   0.598   21     0.3     35.6    -0.0   -32.3    -0.5
EC-6.3.3-662   0.731   21     0.3     35.6    -0.0   -32.3    -0.5
EC-6.2.5       0.061    1     0.1      6.0    -0.0    -5.3    -0.1
EC-6.2.6-(Y)   0.131   21     0.3     35.6    -0.0   -32.3    -0.5
EC-6.3.2 LTB   0.718   21     0.3     35.6    -0.0   -32.3    -0.5
  Details of torsion design given in .anl file output.
```

## Dimenzioniranje elementa 127 – krovna stabilizacija QC80x3

```
ALL UNITS ARE - KN   METE (UNLESS OTHERWISE NOTED)
MEMBER    TABLE      RESULT/  CRITICAL COND/    RATIO/    LOADING/
                       FX          MY          MZ      LOCATION
=========================================================================
  127 ST   TUB80803    (EUROPEAN SECTIONS)
                  PASS    EC-6.3.1.1        0.452       22
               52.33 C        0.00          0.00       3.67
=========================================================================
 MATERIAL DATA
   Grade of steel          = S 235
   Modulus of elasticity   = 205 kN/mm2
   Design Strength  (py)   = 235  N/mm2

 SECTION PROPERTIES (units - cm)
   Member Length =   366.81
   Gross Area =   10.90         Net Area =   10.90

                             z-axis        y-axis
   Moment of inertia       :     106.000       106.000
   Plastic modulus         :      31.540        31.540
   Elastic modulus         :      26.500        26.500
   Shear Area              :       5.450         5.450
   Radius of gyration      :       3.118         3.118
   Effective Length        :     366.813       366.813

 DESIGN DATA (units - kN,m)   EUROCODE NO.3 /2005
   Section Class           :  CLASS 1
   Squash Load             :  256.15
   Axial force/Squash load :    0.204
   GM0 :  1.00         GM1 :  1.10         GM2 :  1.25

                             z-axis        y-axis
   Slenderness ratio (KL/r) :       117.6         117.6
   Compression Capacity     :       115.9         115.9
   Tension Capacity         :       256.2         256.2
   Moment Capacity          :         7.4           7.4
   Reduced Moment Capacity  :         7.4           7.4
   Shear Capacity           :        73.9          73.9

 BUCKLING CALCULATIONS (units - kN,m)
   Lateral Torsional Buckling Moment      MB =    6.7
   co-efficients C1 & K : C1 =1.132 K =1.0, Effective Length= 3.668

 CRITICAL LOADS FOR EACH CLAUSE CHECK (units- kN,m):
  CLAUSE       RATIO  LOAD    FX      VY      VZ      MZ      MY
EC-6.3.1.1     0.452   22    52.3     0.0     0.0     0.0     0.0
 Torsion and deflections have not been considered in the design.
```

## Dimenzioniranje – skraćeni ispis svih elemenata

ALL UNITS ARE - KN METE (UNLESS OTHERWISE NOTED)

| MEMBER | TABLE | RESULT/ | CRITICAL COND/ | RATIO/ | LOADING/ |
|---|---|---|---|---|---|
| | | FX | MY | MZ | LOCATION |
| 1 | ST TUB1201205 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.565 | 22 |
| | | 11.71 C | -0.10 | 10.93 | 0.00 |
| 2 | ST IPE360 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.2.9.1 | 0.095 | 23 |
| | | 0.10 C | -6.44 | 3.25 | 0.50 |
| 3 | ST IPE300 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.308 | 21 |
| | | 123.16 C | 0.04 | 4.30 | 4.45 |
| 4 | ST HE220A | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.910 | 21 |
| | | 138.52 C | 2.94 | -119.39 | 3.60 |
| 5 | ST IPE360 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.2 LTB | 0.182 | 21 |
| | | 10.26 T | -0.01 | 59.89 | 0.50 |
| 6 | ST HE220A | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.849 | 22 |
| | | 127.76 C | -0.82 | -115.07 | 3.60 |
| 7 | ST IPE360 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.248 | 23 |
| | | 90.63 C | -9.52 | 50.16 | 0.50 |
| 8 | ST HE160A | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.385 | 22 |
| | | 0.78 C | -0.77 | -16.82 | 6.00 |
| 9 | ST HE160A | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.2 LTB | 0.221 | 22 |
| | | 12.39 T | 0.17 | 13.97 | 0.00 |
| 10 | ST IPE360 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.032 | 22 |
| | | 20.72 C | -1.10 | 3.40 | 0.00 |
| 11 | ST IPE360 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.815 | 21 |
| | | 20.19 C | -0.54 | -211.99 | 0.00 |
| 12 | ST IPE360 | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.790 | 22 |
| | | 126.78 C | -0.66 | -191.07 | 0.00 |
| 13 | ST HE160A | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.3-662 | 0.463 | 21 |
| | | 1.10 C | 1.07 | -28.16 | 2.50 |
| 14 | ST HE160A | (EUROPEAN SECTIONS) | | | |
| | | PASS | EC-6.3.2 LTB | 0.421 | 21 |

```
            31.97 T       -0.52        26.62       0.00
=========================================================================

   15 ST  IPE300     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.255       22
             1.38 C       -0.04       -18.77       2.47
=========================================================================

   16 ST  IPE300     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.331       21
           111.95 C        0.02         6.23       4.45
=========================================================================

   17 ST  HE220A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.808       21
           125.02 C       -0.07       -106.62       3.60
=========================================================================

   18 ST  IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.165       21
             8.31 T       -0.00        54.36       0.50
=========================================================================

   19 ST  HE220A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.845       22
           127.96 C        0.00       -115.13       3.60
=========================================================================

   20 ST  IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.208       23
            72.32 C       -6.07        50.36       0.50
=========================================================================

   21 ST  HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.281       23
            10.10 T       -0.37       -12.64       6.00
=========================================================================

   22 ST  HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.280       23
            10.61 T        0.58       -12.60       6.00
=========================================================================

   23 ST  IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.741       21
             7.38 C       -0.16       -194.84       0.00
=========================================================================

   24 ST  IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.786       22
           130.32 C        0.00       -190.75       0.00
=========================================================================

   25 ST  HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.471       22
            17.47 C       -1.61        27.55       0.00
=========================================================================

   26 ST  HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.419       21
            37.16 T       -0.30        26.47       0.00
=========================================================================

   27 ST  IPE300     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.278       22
             1.38 C       -0.02       -20.52       2.47
=========================================================================

   28 ST  IPE300     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.331       21
           111.95 C       -0.02         6.23       4.45
=========================================================================

   29 ST  HE220A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.808       21
```

```
            125.02 C        0.07       -106.62       3.60
 ========================================================================

   30 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.165       21
              8.31 T        0.00         54.36       0.50
 ========================================================================

   31 ST  HE220A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.849       22
             127.75 C        0.82       -115.05       3.60
 ========================================================================

   32 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.213       22
             136.75 C        3.21         52.91       0.50
 ========================================================================

   33 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.282       23
             11.34 T       -0.26        -12.69       6.00
 ========================================================================

   34 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.278       23
             12.21 T        0.64        -12.51       6.00
 ========================================================================

   35 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.741       21
              7.38 C        0.16       -194.84       0.00
 ========================================================================

   36 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.790       22
             126.78 C        0.66       -191.06       0.00
 ========================================================================

   37 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.488       22
             36.91 C       -1.71         27.17       0.00
 ========================================================================

   38 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.419       21
             37.43 T       -0.32         26.47       0.00
 ========================================================================

   39 ST  IPE300     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.278       22
              1.38 C        0.02        -20.52       2.47
 ========================================================================

   40 ST  IPE300     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.335       21
             123.18 C       -0.04          4.30       4.45
 ========================================================================

   41 ST  HE220A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.910       21
             138.54 C       -2.94        -119.41       3.60
 ========================================================================

   42 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.182       21
             10.26 T        0.01         59.90       0.50
 ========================================================================

   43 ST  TUB1201205  (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.581       22
             16.64 C        0.10         10.94       0.00
 ========================================================================

   44 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.062       23
```

```
            11.82 C       -3.66         9.00       0.50
=========================================================================

   45 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.181       21
             8.33 T       -0.16        11.42       0.00
=========================================================================

   46 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.385       22
             0.78 C        0.77        16.83       0.00
=========================================================================

   47 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.815       21
            20.19 C        0.54      -212.01       0.00
=========================================================================

   48 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.038       22
            21.96 C       -0.08        -9.93       0.85
=========================================================================

   49 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.488       22
            33.96 C       -1.55        27.56       0.00
=========================================================================

   50 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.429       21
            20.97 T       -1.29        27.14       3.00
=========================================================================

   51 ST  IPE300     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.255       22
             1.38 C        0.04       -18.77       2.47
=========================================================================

   52 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.086       23
             2.15 C       -4.66        -4.41       0.90
=========================================================================

   53 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.709       21
             6.10 T        0.59       198.86       1.86
=========================================================================

   54 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.523       21
             4.19 T       -0.15       -23.55       6.00
=========================================================================

   55 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.707       22
           139.59 C        0.47       178.48       1.86
=========================================================================

   56 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.371       21
             4.86 T       -0.46        23.48       0.00
=========================================================================

   57 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.2 LTB      0.648       21
             3.86 T        0.07       181.73       1.86
=========================================================================

   58 ST  HE160A     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.504       22
            21.77 C       -0.86       -18.97       6.00
=========================================================================

   59 ST  IPE360     (EUROPEAN SECTIONS)
                PASS    EC-6.3.3-662      0.694       22
```

```
            121.06 C       -0.00        178.42       1.86
=========================================================================

   60 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.509       22
              21.69 C        0.90        -19.26       6.00
=========================================================================

   61 ST   IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.648       21
              3.86 T       -0.07        181.73       1.86
=========================================================================

   62 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.509       22
              21.69 C       -0.90         19.26       0.00
=========================================================================

   63 ST   IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.707       22
             139.59 C       -0.47        178.46       1.86
=========================================================================

   64 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.504       22
              21.77 C        0.86         18.97       0.00
=========================================================================

   65 ST   IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.709       21
              6.10 T       -0.59        198.88       1.86
=========================================================================

   66 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.349       22
              29.57 C       -1.75         18.56       0.00
=========================================================================

   67 ST   IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.067       22
              21.23 C       -2.32         -9.46       0.00
=========================================================================

   68 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.524       21
              4.19 T        0.15         23.58       0.00
=========================================================================

   69 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.191       23
              4.63 T        0.15        -12.05       3.00
=========================================================================

   70 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.227       23
              6.75 T       -0.05        -14.36       3.00
=========================================================================

   71 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.366       23
             40.44 C        3.14        -17.53       3.00
=========================================================================

   72 ST   HE160A     (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB      0.372       21
              4.86 T        0.46        -23.51       3.00
=========================================================================

   73 ST   IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.2.9.1        0.016       22
              9.27 C        1.11          0.45       0.00
=========================================================================

   74 ST   IPE360     (EUROPEAN SECTIONS)
                PASS     EC-6.3.3-662      0.061       23
```

2.05 C -2.39 -11.16 0.00
==========

75 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.764 21
7.88 C 0.64 211.99 1.86
==========

76 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.731 21
0.30 C -0.48 -32.33 6.00
==========

77 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.756 22
133.83 C 0.72 191.07 1.86
==========

78 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.2 LTB 0.509 21
11.93 T -0.64 32.21 0.00
==========

79 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.697 21
2.76 C 0.15 194.84 1.86
==========

80 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.689 21
0.54 C -0.75 30.59 0.00
==========

81 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.743 22
126.62 C -0.00 190.75 1.86
==========

82 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.686 21
0.46 C 0.53 -30.56 6.00
==========

83 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.697 21
2.76 C -0.15 194.84 1.86
==========

84 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.686 21
0.46 C -0.53 30.56 0.00
==========

85 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.756 22
133.83 C -0.72 191.06 1.86
==========

86 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.689 21
0.54 C 0.75 -30.58 6.00
==========

87 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.764 21
7.88 C -0.64 212.01 1.86
==========

88 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.504 21
10.52 C -0.91 30.57 0.00
==========

89 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.058 22

23.69 C 0.17 -14.67 0.00
==========

90 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.732 21
0.30 C 0.48 32.37 0.00
==========

91 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.479 22
57.04 C 0.61 -119.14 2.11
==========

92 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.612 22
14.45 C -0.46 -24.71 6.00
==========

93 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.472 22
74.47 C 0.65 -115.06 2.11
==========

94 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.2 LTB 0.390 22
12.18 T -0.11 24.64 0.00
==========

95 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.426 21
51.13 C 0.10 -106.62 2.11
==========

96 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.563 22
9.46 C -0.87 23.60 0.00
==========

97 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.464 22
66.30 C -0.00 -115.12 2.11
==========

98 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.2 LTB 0.524 22
0.53 T 0.83 -23.61 6.00
==========

99 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.426 21
51.13 C -0.10 -106.62 2.11
==========

100 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.2 LTB 0.524 22
0.53 T -0.83 23.61 0.00
==========

101 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.472 22
74.46 C -0.65 -115.05 2.11
==========

102 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.563 22
9.46 C 0.87 -23.59 6.00
==========

103 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.479 22
57.05 C -0.61 -119.16 2.11
==========

104 ST HE160A (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.398 22

```
            12.74 C       -1.09        23.57       0.00
=====================================================================

  105 ST  IPE360     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662      0.051       22
             9.77 C       -1.11        -9.90       0.00
=====================================================================

  106 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662      0.613       22
            14.46 C        0.45        24.76       0.00
=====================================================================

  107 ST  TUB1201205  (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662      0.306       23
            18.73 C       -5.48        -0.00       1.80
=====================================================================

  108 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662      0.488       22
            33.96 C        1.55       -27.56       3.00
=====================================================================

  109 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.2 LTB      0.421       21
            31.98 T        0.52       -26.62       3.00
=====================================================================

  110 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662      0.504       21
            10.52 C        0.91       -30.58       3.00
=====================================================================

  111 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.2 LTB      0.510       21
            11.93 T        0.64       -32.25       3.00
=====================================================================

  112 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662      0.399       22
            12.74 C        1.09       -23.58       3.00
=====================================================================

  113 ST  HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.2 LTB      0.390       22
            12.17 T        0.11       -24.69       3.00
=====================================================================

  114 ST  TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1        0.138       22
            15.95 C        0.00         0.00       0.00
=====================================================================

  115 ST  TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)      0.057       22
            14.54 T        0.00         0.00       0.00
=====================================================================

  116 ST  TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1        0.451       22
            52.32 C        0.00         0.00       0.00
=====================================================================

  117 ST  TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)      0.196       22
            50.23 T        0.00         0.00       0.00
=====================================================================

  118 ST  TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1        0.184       22
            22.52 C        0.00         0.00       0.00
=====================================================================

  119 ST  TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)      0.080       22
```

20.61 T 0.00 0.00 0.00
==========

120 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.257 23
31.52 C 0.00 0.00 0.00
==========

121 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.2.3 (T) 0.108 23
27.67 T 0.00 0.00 0.00
==========

122 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.095 4
11.69 C 0.00 0.00 0.00
==========

123 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.188 22
23.03 C 0.00 0.00 3.53
==========

124 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.2.3 (T) 0.080 22
20.58 T 0.00 0.00 0.00
==========

125 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.184 22
22.52 C 0.00 0.00 3.53
==========

126 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.2.3 (T) 0.196 22
50.22 T 0.00 0.00 0.00
==========

127 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.452 22
52.33 C 0.00 0.00 3.67
==========

128 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.2.3 (T) 0.057 22
14.51 T 0.00 0.00 0.00
==========

129 ST TUB80803 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.138 22
15.95 C 0.00 0.00 3.67
==========

130 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.054 22
19.40 C 1.43 9.92 1.26
==========

131 ST TUB1201205 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.075 22
27.04 C -0.00 0.00 0.00
==========

132 ST IPE360 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.050 22
20.10 C 0.87 11.34 0.00
==========

133 ST TUB1201205 (EUROPEAN SECTIONS)
PASS EC-6.3.1.1 0.110 21
38.47 C 0.00 0.00 0.00
==========

134 ST TUB1201205 (EUROPEAN SECTIONS)
PASS EC-6.3.3-662 0.421 23

```
            31.89 C       -6.83        -0.00       2.01
==========================================================================

  135 ST   IPE360     (EUROPEAN SECTIONS)
               PASS    EC-6.2.9.1       0.069       23
             0.41 T       4.66         4.41       0.00
==========================================================================

  136 ST   TUB1201205  (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662     0.457       23
            26.07 C       -7.83         0.00       2.15
==========================================================================

  137 ST   HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.2 LTB     0.419       21
            37.43 T       0.32        -26.47       3.00
==========================================================================

  138 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)     0.187       22
            47.95 T       0.00         0.00       0.00
==========================================================================

  139 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1       0.430       22
            49.87 C       0.00         0.00       3.67
==========================================================================

  140 ST   HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662     0.488       22
            36.91 C       1.71        -27.17       3.00
==========================================================================

  141 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1       0.531       22
            61.49 C       0.00         0.00       0.00
==========================================================================

  142 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)     0.233       22
            59.56 T       0.00         0.00       0.00
==========================================================================

  143 ST   HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.2 LTB     0.419       21
            37.16 T       0.30        -26.47       3.00
==========================================================================

  144 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)     0.232       22
            59.54 T       0.00         0.00       0.00
==========================================================================

  145 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1       0.531       22
            61.49 C       0.00         0.00       3.67
==========================================================================

  146 ST   HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662     0.471       22
            17.47 C       1.61        -27.55       3.00
==========================================================================

  147 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.3.1.1       0.430       22
            49.87 C       0.00         0.00       0.00
==========================================================================

  148 ST   TUB80803   (EUROPEAN SECTIONS)
               PASS    EC-6.2.3 (T)     0.187       22
            47.98 T       0.00         0.00       0.00
==========================================================================

  149 ST   HE160A     (EUROPEAN SECTIONS)
               PASS    EC-6.3.3-662     0.463       21
```

```
             1.10 C        1.07       -28.16       0.50
 ================================================================

  150 ST   TUB80803    (EUROPEAN SECTIONS)
                PASS     EC-6.3.1.1       0.201       23
             23.32 C        0.00         0.00       0.00
 ================================================================

  151 ST   TUB80803    (EUROPEAN SECTIONS)
                PASS     EC-6.2.3 (T)     0.084       23
             21.59 T        0.00         0.00       0.00
 ================================================================

  152 ST   HE160A      (EUROPEAN SECTIONS)
                PASS     EC-6.3.2 LTB     0.429       21
             20.95 T        1.29        -27.14       0.00
 ================================================================

  153 ST   TUB80803    (EUROPEAN SECTIONS)
                PASS     EC-6.2.3 (T)     0.078       22
             20.04 T        0.00         0.00       0.00
 ================================================================

  154 ST   TUB80803    (EUROPEAN SECTIONS)
                PASS     EC-6.3.1.1       0.188       22
             21.82 C        0.00         0.00       3.67
 ================================================================
```

## Reakcije

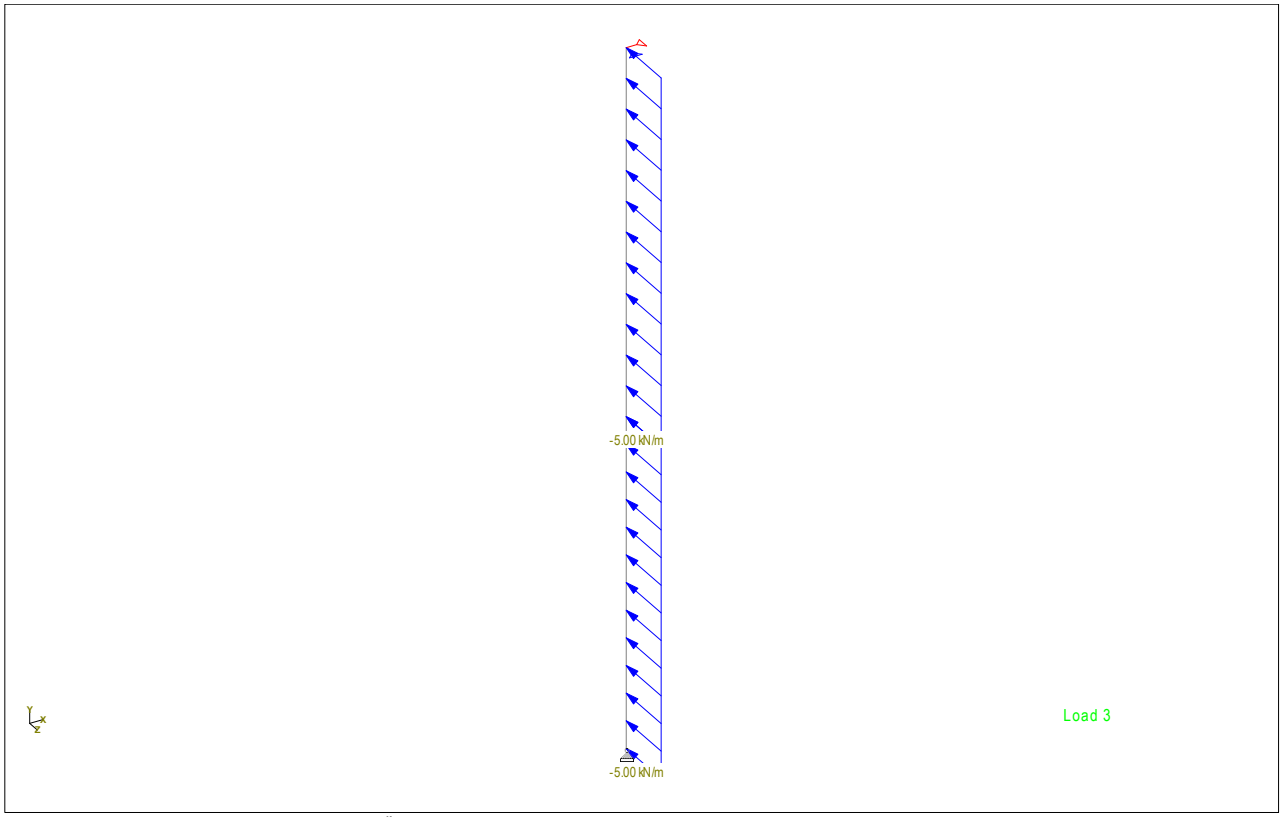
| Node | L/C | Horizontal FX (kN) | Vertical FY (kN) | Horizontal FZ (kN) | Moment MX (kNm) | MY (kNm) | MZ (kNm) |
|---|---|---|---|---|---|---|---|
| 1 | 1:STALNI TERET + | -0.725 | 1.107 | 1.629 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -1.764 | 3.334 | 3.626 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -1.613 | -0.892 | 10.619 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -7.050 | 0.477 | -4.713 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -2.489 | 4.441 | 5.254 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -4.102 | 3.549 | 15.873 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -9.539 | 4.918 | 0.541 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -3.625 | 6.496 | 7.637 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -5.538 | 4.792 | 21.429 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -12.877 | 6.639 | 0.731 | 0.00 | 0.00 | 0.00 |
| 2 | 1:STALNI TERET + | 0.004 | 3.433 | 0.001 | 0.00 | -0.02 | -0.01 |
| | 2:SNIJEG | 0.009 | 4.083 | 0.001 | 0.00 | -0.03 | -0.03 |
| | 3:VJETAR -Z | 0.009 | 1.160 | 11.248 | 8.09 | 0.01 | -0.03 |
| | 4:VJETAR +X | -2.593 | -0.101 | -0.001 | -0.00 | -0.01 | 2.21 |
| | 11:1+2 | 0.013 | 7.516 | 0.002 | 0.01 | -0.04 | -0.05 |
| | 12:1+2+3 | 0.021 | 8.676 | 11.250 | 8.10 | -0.04 | -0.08 |
| | 13:1+2+4 | -2.580 | 7.415 | 0.001 | 0.00 | -0.06 | 2.16 |
| | 21:1.35*1+1.50*2 | 0.019 | 10.759 | 0.003 | 0.01 | -0.06 | -0.07 |
| | 22:1.35*(1+2+3) | 0.029 | 11.713 | 15.187 | 10.93 | -0.05 | -0.10 |
| | 23:1.35*(1+2+4) | -3.483 | 10.010 | 0.001 | 0.00 | -0.08 | 2.92 |
| 4 | 1:STALNI TERET + | -0.002 | 26.464 | 0.203 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.005 | 59.945 | 0.461 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.006 | 6.065 | -1.297 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.030 | -0.065 | -0.286 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.007 | 86.409 | 0.664 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.013 | 92.474 | -0.633 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.036 | 86.344 | 0.378 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.010 | 125.643 | 0.965 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.017 | 124.840 | -0.855 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.049 | 116.564 | 0.511 | 0.00 | 0.00 | 0.00 |
| 6 | 1:STALNI TERET + | -0.289 | 33.113 | -9.962 | -10.72 | 0.00 | 0.31 |
| | 2:SNIJEG | -0.505 | 64.143 | -22.570 | -24.29 | 0.00 | 0.52 |
| | 3:VJETAR -Z | 0.017 | 7.282 | 9.336 | 7.34 | 0.00 | -0.10 |
| | 4:VJETAR +X | -1.177 | 0.025 | -0.903 | -1.95 | -0.00 | 2.51 |
| | 11:1+2 | -0.794 | 97.256 | -32.532 | -35.01 | 0.00 | 0.83 |
| | 12:1+2+3 | -0.777 | 104.538 | -23.196 | -27.67 | 0.00 | 0.72 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 13:1+2+4 | -1.971 | 97.281 | -33.435 | -36.95 | 0.00 | 3.34 |
| | 21:1.35*1+1.50*2 | -1.147 | 140.917 | -47.304 | -50.90 | 0.00 | 1.19 |
| | 22:1.35*(1+2+3) | -1.049 | 141.126 | -31.315 | -37.35 | 0.00 | 0.98 |
| | 23:1.35*(1+2+4) | -2.660 | 131.329 | -45.138 | -49.88 | 0.00 | 4.50 |
| 8 | 1:STALNI TERET + | -0.845 | 18.666 | 21.314 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -1.991 | 49.162 | 48.110 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -1.923 | 0.117 | 39.236 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -11.267 | -0.516 | 4.836 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -2.836 | 67.828 | 69.424 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -4.759 | 67.945 | 108.660 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -14.103 | 67.312 | 74.260 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -4.127 | 98.942 | 100.939 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -6.425 | 91.726 | 146.690 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -19.039 | 90.871 | 100.251 | 0.00 | 0.00 | 0.00 |
| 9 | 1:STALNI TERET + | 0.075 | 30.657 | -9.708 | -10.95 | 0.00 | -0.12 |
| | 2:SNIJEG | 0.152 | 58.596 | -21.698 | -24.47 | 0.00 | -0.25 |
| | 3:VJETAR -Z | 0.089 | 7.161 | 8.230 | 4.81 | 0.00 | -0.17 |
| | 4:VJETAR +X | -1.289 | -0.001 | 0.011 | 0.01 | -0.00 | 2.63 |
| | 11:1+2 | 0.227 | 89.253 | -31.406 | -35.41 | 0.00 | -0.36 |
| | 12:1+2+3 | 0.317 | 96.414 | -23.176 | -30.60 | 0.00 | -0.54 |
| | 13:1+2+4 | -1.062 | 89.253 | -31.396 | -35.40 | -0.00 | 2.27 |
| | 21:1.35*1+1.50*2 | 0.330 | 129.281 | -45.653 | -51.48 | 0.00 | -0.53 |
| | 22:1.35*(1+2+3) | 0.428 | 130.159 | -31.287 | -41.31 | 0.00 | -0.72 |
| | 23:1.35*(1+2+4) | -1.433 | 120.491 | -42.384 | -47.80 | -0.00 | 3.07 |
| 14 | 1:STALNI TERET + | -0.002 | 0.000 | 0.183 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.004 | 0.000 | 0.414 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.005 | 0.000 | 11.209 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.027 | 0.000 | -0.257 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.006 | 0.000 | 0.597 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.012 | 0.000 | 11.806 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.033 | 0.000 | 0.340 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.009 | 0.000 | 0.868 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.016 | 0.000 | 15.938 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.044 | 0.000 | 0.459 | 0.00 | 0.00 | 0.00 |
| 15 | 1:STALNI TERET + | -0.001 | 24.222 | 0.294 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.002 | 54.488 | 0.669 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.003 | 5.660 | -1.015 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.027 | 0.014 | 0.018 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.003 | 78.711 | 0.963 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.006 | 84.370 | -0.052 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.031 | 78.725 | 0.981 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.005 | 114.432 | 1.400 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.008 | 113.900 | -0.070 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.041 | 106.278 | 1.325 | 0.00 | 0.00 | 0.00 |
| 17 | 1:STALNI TERET + | 0.012 | 29.890 | -8.705 | -8.99 | 0.00 | -0.03 |
| | 2:SNIJEG | 0.029 | 58.047 | -19.849 | -20.49 | 0.00 | -0.07 |
| | 3:VJETAR -Z | 0.037 | 6.274 | 10.477 | 9.57 | 0.00 | -0.08 |
| | 4:VJETAR +X | -1.264 | -0.007 | 0.055 | 0.12 | -0.00 | 2.60 |
| | 11:1+2 | 0.040 | 87.937 | -28.554 | -29.48 | 0.00 | -0.09 |
| | 12:1+2+3 | 0.078 | 94.211 | -18.077 | -19.91 | 0.00 | -0.17 |
| | 13:1+2+4 | -1.224 | 87.931 | -28.499 | -29.36 | -0.00 | 2.50 |
| | 21:1.35*1+1.50*2 | 0.059 | 127.422 | -41.525 | -42.87 | 0.00 | -0.14 |
| | 22:1.35*(1+2+3) | 0.105 | 127.185 | -24.403 | -26.88 | 0.00 | -0.23 |
| | 23:1.35*(1+2+4) | -1.653 | 118.706 | -38.473 | -39.63 | -0.00 | 3.38 |
| 19 | 1:STALNI TERET + | -0.000 | 18.626 | 18.546 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.000 | 50.348 | 42.266 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.000 | 0.738 | 33.811 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -8.991 | 0.002 | -0.018 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.000 | 68.974 | 60.812 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.000 | 69.712 | 94.623 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -8.991 | 68.976 | 60.794 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.000 | 100.667 | 88.436 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.000 | 94.111 | 127.741 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -12.138 | 93.117 | 82.071 | 0.00 | 0.00 | 0.00 |
| 20 | 1:STALNI TERET + | -0.000 | 30.310 | -9.576 | -10.81 | -0.00 | 0.00 |
| | 2:SNIJEG | -0.000 | 58.979 | -21.816 | -24.62 | -0.00 | 0.00 |
| | 3:VJETAR -Z | -0.000 | 7.276 | 8.174 | 4.73 | -0.00 | 0.00 |
| | 4:VJETAR +X | -1.258 | 0.002 | -0.000 | -0.00 | -0.00 | 2.58 |
| | 11:1+2 | -0.000 | 89.289 | -31.391 | -35.43 | -0.00 | 0.00 |

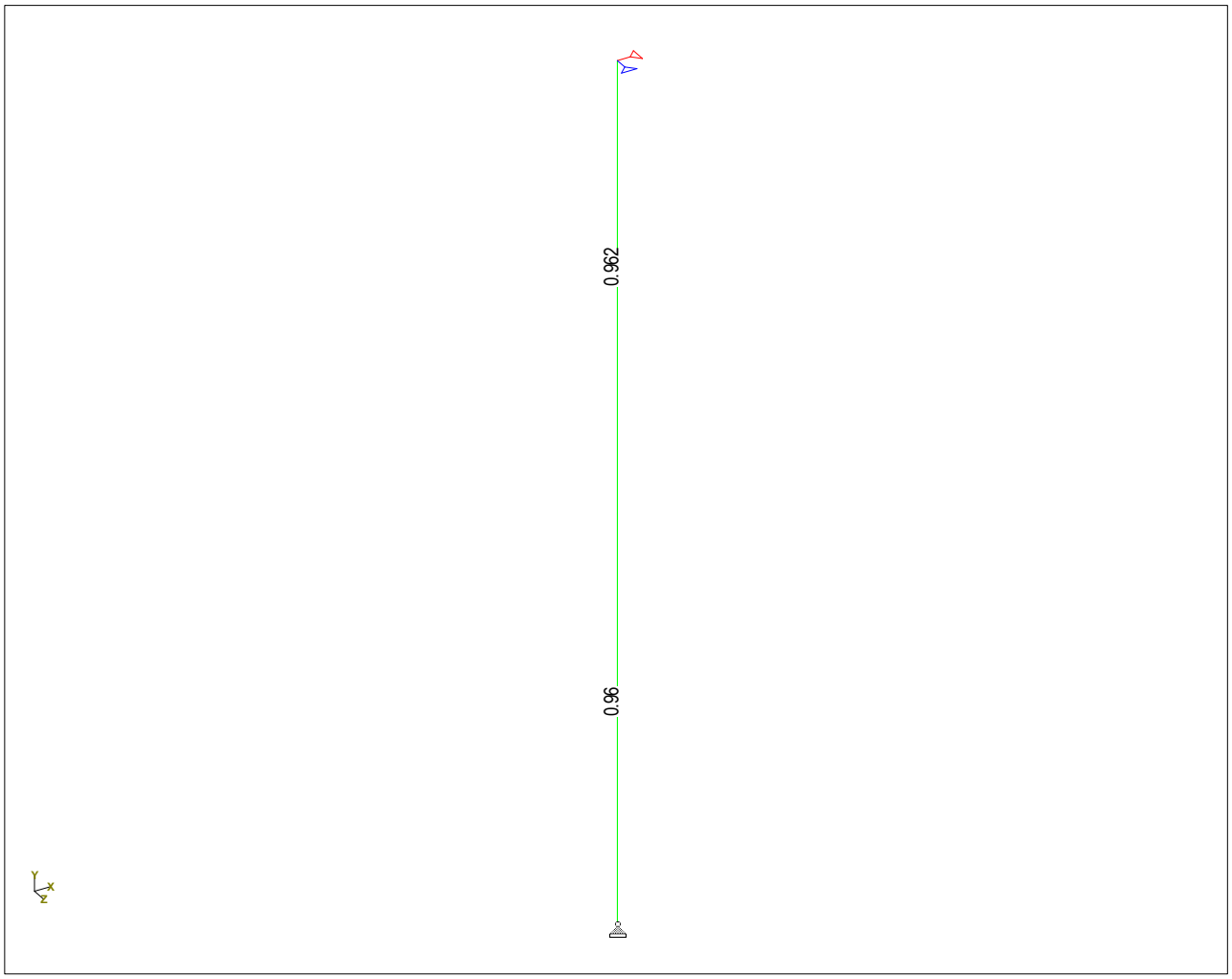
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 12:1+2+3 | -0.000 | 96.565 | -23.217 | -30.70 | -0.00 | 0.00 |
| | 13:1+2+4 | -1.258 | 89.291 | -31.392 | -35.43 | -0.00 | 2.58 |
| | 21:1.35*1+1.50*2 | -0.000 | 129.387 | -45.651 | -51.53 | -0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.000 | 130.363 | -31.343 | -41.45 | -0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -1.698 | 120.543 | -42.379 | -47.83 | -0.00 | 3.48 |
| 24 | 1:STALNI TERET + | -0.001 | 0.000 | 0.264 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.002 | 0.000 | 0.602 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.002 | 0.000 | 11.463 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.025 | 0.000 | 0.017 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.003 | 0.000 | 0.866 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.005 | 0.000 | 12.328 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.028 | 0.000 | 0.882 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.004 | 0.000 | 1.259 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.007 | 0.000 | 16.643 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.037 | 0.000 | 1.191 | 0.00 | 0.00 | 0.00 |
| 25 | 1:STALNI TERET + | 0.001 | 24.223 | 0.294 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.002 | 54.489 | 0.669 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.003 | 5.660 | -1.015 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.026 | -0.015 | -0.019 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 0.003 | 78.712 | 0.963 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.006 | 84.372 | -0.052 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.023 | 78.698 | 0.944 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 0.005 | 114.435 | 1.400 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.008 | 113.903 | -0.070 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.031 | 106.242 | 1.274 | 0.00 | 0.00 | 0.00 |
| 27 | 1:STALNI TERET + | -0.012 | 29.890 | -8.705 | -8.99 | -0.00 | 0.03 |
| | 2:SNIJEG | -0.029 | 58.048 | -19.849 | -20.49 | -0.00 | 0.07 |
| | 3:VJETAR -Z | -0.037 | 6.274 | 10.477 | 9.57 | -0.00 | 0.08 |
| | 4:VJETAR +X | -1.250 | 0.011 | -0.057 | -0.13 | -0.00 | 2.57 |
| | 11:1+2 | -0.040 | 87.939 | -28.554 | -29.48 | -0.00 | 0.09 |
| | 12:1+2+3 | -0.078 | 94.213 | -18.077 | -19.91 | -0.00 | 0.17 |
| | 13:1+2+4 | -1.290 | 87.950 | -28.611 | -29.61 | -0.00 | 2.66 |
| | 21:1.35*1+1.50*2 | -0.059 | 127.425 | -41.525 | -42.87 | -0.00 | 0.14 |
| | 22:1.35*(1+2+3) | -0.105 | 127.187 | -24.404 | -26.88 | -0.00 | 0.23 |
| | 23:1.35*(1+2+4) | -1.742 | 118.732 | -38.625 | -39.97 | -0.00 | 3.59 |
| 29 | 1:STALNI TERET + | 0.845 | 18.664 | 21.313 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 1.990 | 49.155 | 48.109 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 1.923 | 0.116 | 39.236 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -10.511 | 0.521 | -4.883 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 2.835 | 67.819 | 69.423 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 4.759 | 67.935 | 108.658 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -7.675 | 68.340 | 64.540 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 4.126 | 98.929 | 100.937 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 6.424 | 91.712 | 146.689 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -10.362 | 92.259 | 87.128 | 0.00 | 0.00 | 0.00 |
| 30 | 1:STALNI TERET + | -0.076 | 30.654 | -9.707 | -10.94 | -0.00 | 0.12 |
| | 2:SNIJEG | -0.152 | 58.591 | -21.696 | -24.46 | -0.00 | 0.25 |
| | 3:VJETAR -Z | -0.089 | 7.160 | 8.231 | 4.81 | -0.00 | 0.17 |
| | 4:VJETAR +X | -1.260 | 0.006 | -0.013 | -0.01 | -0.00 | 2.58 |
| | 11:1+2 | -0.228 | 89.244 | -31.403 | -35.41 | -0.00 | 0.36 |
| | 12:1+2+3 | -0.317 | 96.404 | -23.172 | -30.59 | -0.00 | 0.54 |
| | 13:1+2+4 | -1.488 | 89.251 | -31.417 | -35.42 | -0.00 | 2.94 |
| | 21:1.35*1+1.50*2 | -0.330 | 129.269 | -45.649 | -51.47 | -0.00 | 0.53 |
| | 22:1.35*(1+2+3) | -0.428 | 130.146 | -31.283 | -41.30 | -0.00 | 0.72 |
| | 23:1.35*(1+2+4) | -2.008 | 120.489 | -42.412 | -47.82 | -0.00 | 3.97 |
| 34 | 1:STALNI TERET + | 0.001 | 0.000 | 0.264 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.002 | 0.000 | 0.602 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.002 | 0.000 | 11.463 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.024 | 0.000 | -0.017 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 0.003 | 0.000 | 0.866 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.005 | 0.000 | 12.328 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.021 | 0.000 | 0.848 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 0.004 | 0.000 | 1.259 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.007 | 0.000 | 16.643 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.028 | 0.000 | 1.145 | 0.00 | 0.00 | 0.00 |
| 35 | 1:STALNI TERET + | 0.002 | 26.468 | 0.203 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.005 | 59.955 | 0.461 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.006 | 6.066 | -1.297 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.026 | 0.066 | 0.289 | 0.00 | 0.00 | 0.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 11:1+2 | 0.007 | 86.423 | 0.664 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.013 | 92.489 | -0.633 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.020 | 86.489 | 0.953 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 0.010 | 125.664 | 0.966 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.017 | 124.860 | -0.855 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.026 | 116.760 | 1.286 | 0.00 | 0.00 | 0.00 |
| 37 | 1:STALNI TERET + | 0.289 | 33.119 | -9.964 | -10.72 | -0.00 | -0.31 |
| | 2:SNIJEG | 0.506 | 64.152 | -22.573 | -24.29 | -0.00 | -0.52 |
| | 3:VJETAR -Z | -0.017 | 7.283 | 9.336 | 7.34 | -0.00 | 0.10 |
| | 4:VJETAR +X | -1.141 | -0.036 | 0.915 | 1.97 | -0.00 | 2.43 |
| | 11:1+2 | 0.795 | 97.270 | -32.537 | -35.01 | -0.00 | -0.83 |
| | 12:1+2+3 | 0.778 | 104.553 | -23.201 | -27.67 | -0.00 | -0.73 |
| | 13:1+2+4 | -0.346 | 97.235 | -31.622 | -33.04 | -0.00 | 1.61 |
| | 21:1.35*1+1.50*2 | 1.149 | 140.938 | -47.311 | -50.91 | -0.00 | -1.19 |
| | 22:1.35*(1+2+3) | 1.051 | 141.147 | -31.322 | -37.36 | -0.00 | -0.98 |
| | 23:1.35*(1+2+4) | -0.467 | 131.267 | -42.690 | -44.60 | -0.00 | 2.17 |
| 39 | 1:STALNI TERET + | 0.725 | 3.559 | 1.636 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 1.764 | 9.446 | 3.636 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 1.613 | -0.428 | 10.620 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -7.906 | -0.479 | 4.767 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 2.489 | 13.006 | 5.272 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 4.101 | 12.578 | 15.892 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -5.418 | 12.527 | 10.039 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 3.624 | 18.975 | 7.662 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 5.537 | 16.980 | 21.454 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -7.314 | 16.911 | 13.552 | 0.00 | 0.00 | 0.00 |
| 40 | 1:STALNI TERET + | -0.004 | 4.772 | 0.001 | 0.00 | 0.02 | 0.01 |
| | 2:SNIJEG | -0.009 | 6.138 | 0.001 | 0.00 | 0.03 | 0.03 |
| | 3:VJETAR -Z | -0.009 | 1.419 | 11.248 | 8.09 | -0.01 | 0.03 |
| | 4:VJETAR +X | -0.115 | 0.101 | 0.001 | 0.00 | -0.02 | 0.41 |
| | 11:1+2 | -0.013 | 10.910 | 0.002 | 0.01 | 0.04 | 0.05 |
| | 12:1+2+3 | -0.021 | 12.329 | 11.250 | 8.10 | 0.04 | 0.08 |
| | 13:1+2+4 | -0.128 | 11.010 | 0.003 | 0.01 | 0.03 | 0.46 |
| | 21:1.35*1+1.50*2 | -0.019 | 15.649 | 0.003 | 0.01 | 0.06 | 0.07 |
| | 22:1.35*(1+2+3) | -0.029 | 16.644 | 15.188 | 10.94 | 0.05 | 0.10 |
| | 23:1.35*(1+2+4) | -0.172 | 14.864 | 0.004 | 0.02 | 0.04 | 0.62 |
| 44 | 1:STALNI TERET + | 0.002 | 0.000 | 0.183 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.004 | 0.000 | 0.414 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.005 | 0.000 | 11.209 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -0.024 | 0.000 | 0.260 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 0.006 | 0.000 | 0.597 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.012 | 0.000 | 11.806 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.018 | 0.000 | 0.857 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 0.009 | 0.000 | 0.868 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.016 | 0.000 | 15.938 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.024 | 0.000 | 1.156 | 0.00 | 0.00 | 0.00 |
| 76 | 1:STALNI TERET + | 0.000 | 5.919 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.000 | 8.278 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.000 | 1.009 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -4.503 | -0.010 | 0.000 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 0.000 | 14.197 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.000 | 15.206 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -4.503 | 14.187 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 0.000 | 20.408 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.000 | 20.529 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -6.079 | 19.153 | -0.000 | 0.00 | 0.00 | 0.00 |
| 84 | 1:STALNI TERET + | -0.000 | 7.498 | -0.008 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.000 | 11.246 | -0.012 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.000 | 1.287 | -0.001 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | 0.000 | 0.011 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | 0.000 | 18.744 | -0.020 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.000 | 20.032 | -0.022 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | 0.000 | 18.756 | -0.020 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | 0.000 | 26.992 | -0.029 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.000 | 27.043 | -0.029 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | 0.000 | 25.320 | -0.027 | 0.00 | 0.00 | 0.00 |
| 86 | 1:STALNI TERET + | -0.000 | 8.365 | 0.006 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.000 | 18.116 | 0.013 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.000 | 1.475 | 0.001 | 0.00 | 0.00 | 0.00 |

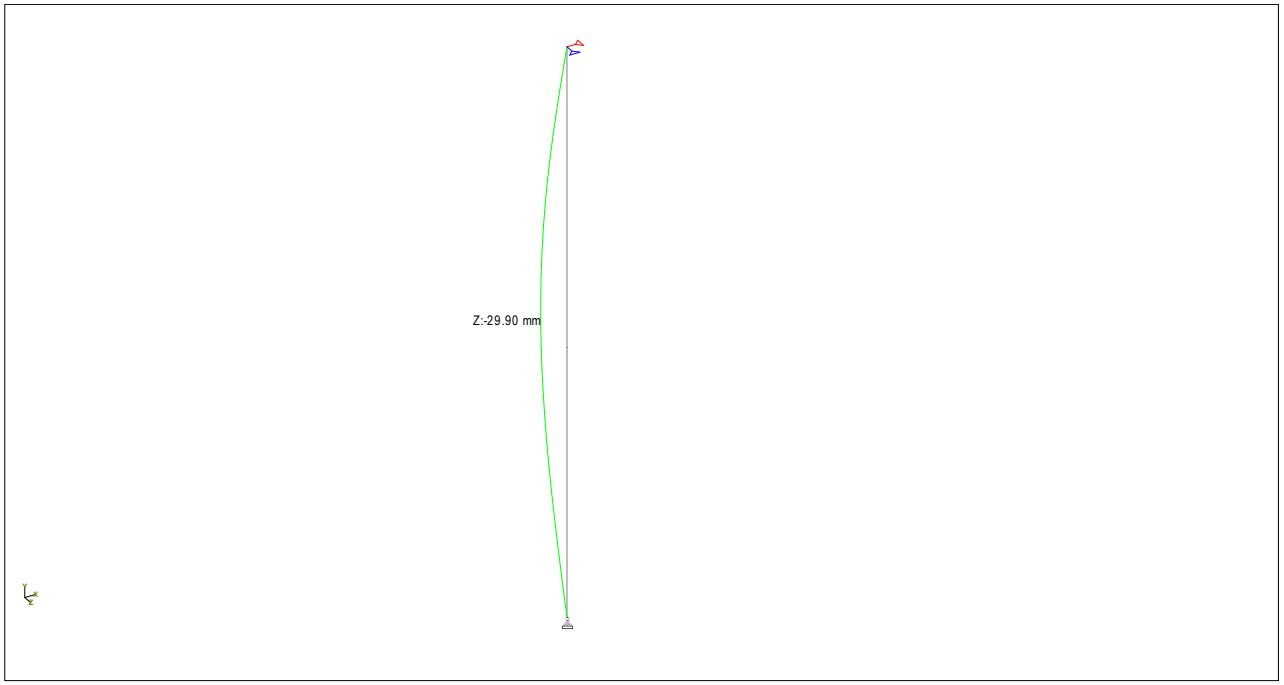
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 4:VJETAR +X | -0.000 | 0.011 | 0.000 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.000 | 26.481 | 0.018 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.000 | 27.956 | 0.019 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -0.000 | 26.492 | 0.018 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.000 | 38.467 | 0.027 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.000 | 37.741 | 0.026 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -0.000 | 35.764 | 0.025 | 0.00 | 0.00 | 0.00 |
| 87 | 1:STALNI TERET + | -0.000 | 8.172 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | -0.000 | 15.817 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | -0.000 | 1.431 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -5.031 | -0.011 | 0.000 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.000 | 23.989 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | -0.000 | 25.420 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -5.031 | 23.978 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.000 | 34.758 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | -0.000 | 34.317 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -6.792 | 32.371 | -0.000 | 0.00 | 0.00 | 0.00 |
| 89 | 1:STALNI TERET + | -0.000 | 6.253 | 0.004 | 0.00 | 0.00 | 0.00 |
| | 2:SNIJEG | 0.000 | 13.443 | 0.009 | 0.00 | 0.00 | 0.00 |
| | 3:VJETAR -Z | 0.000 | 1.046 | 0.001 | 0.00 | 0.00 | 0.00 |
| | 4:VJETAR +X | -5.386 | -0.007 | -0.000 | 0.00 | 0.00 | 0.00 |
| | 11:1+2 | -0.000 | 19.697 | 0.013 | 0.00 | 0.00 | 0.00 |
| | 12:1+2+3 | 0.000 | 20.743 | 0.014 | 0.00 | 0.00 | 0.00 |
| | 13:1+2+4 | -5.386 | 19.690 | 0.013 | 0.00 | 0.00 | 0.00 |
| | 21:1.35*1+1.50*2 | -0.000 | 28.607 | 0.019 | 0.00 | 0.00 | 0.00 |
| | 22:1.35*(1+2+3) | 0.000 | 28.003 | 0.018 | 0.00 | 0.00 | 0.00 |
| | 23:1.35*(1+2+4) | -7.272 | 26.582 | 0.017 | 0.00 | 0.00 | 0.00 |




*OPTERECENJE SAMOSTALNOG STUPA PROČELJA*




*REZULTATI DIMENZIONIRANJA*




*MAKSIMALNA DEFORMACIJA*

### 2.3.3. Proračun temelja

Proračun temelja gore obrađenih konstrukcija obrađen je u sklopu Mape 2 projektne dokumentacije.

Projektant konstrukcije:
Ozren Sudić, dipl.ing.građ.

## 2.4. Program kontrole i osiguranja kvalitete

### 2.4.1. Čelična konstrukcija

***Opći uvjeti za izradu i montažu čelične konstrukcije***

Konstrukcija obrađena ovim rješenjima podliježe primjeni tehničkih propisa za nosive konstrukcije.

U tehničkoj dokumentaciji predviđena je vrsta i kvaliteta materijala od kojeg konstrukciju treba izraditi. Materijal druge vrste i kvalitete ne može se upotrijebiti bez suglasnosti i odobrenja projektanta. U istoj tehničkoj dokumentaciji definiran je oblik, kvaliteta i pozicije. Za svaku promjenu potrebno je prethodno ishoditi odobrenje projektanta.

***Osnovni dokument za izvođenje***

Potrebno je sve radove izvoditi prema:

- glavnom projektu (građevna dozvola)
- izvedbenom projektu (usklađenom s glavnim projektom)
- tehnološkom projektu (prema Pravilniku o montaži čeličnih nosivih konstrukcija), koji u pravilu sadrži tehnologiju izvođenja zavarenih spojeva i planove montaže čelične konstrukcije s redoslijedom montaže i podacima o skelama, opremom za dizanje i mjerama zaštite na radu.

***Podloge za izradu tehnologije zavarivanja i dokaze kvalitete***

Tehnologiju zavarivanja potrebno je uskladiti sa slijedećim zahtjevima:

Potrebno je izvršiti kontrolu varova nerazornim metodama i to:
- Dimenzionalna i vizualna kontrola 100% prema EN 970.
- Ostale kontrole sukladno klasi izvođenja EXC2
- Dopuštena razina grešaka (kvaliteta vara) određuje se prema HRN EN ISO 5817 za grupu B.
- Prigodom nabave materijala obavezno je tražiti odgovarajuće ateste za osnovni i dodatni materijal. Kvaliteta elekrode definirana je prema EN 499 i usvaja se u ovisnosti o odabranoj kvaliteti čelika.
- Kod zavarivačkih radova potrebno je osigurati stalnu kontrolu prije, u toku i nakon izvedenih radova. Površine za zavarivanje moraju biti kvalitetno pripremljene, bez masnoća, hrđe i drugih prljavština. Prije izvedenih zavarivačkih radova potrebno je obaviti dimenzionalnu i vizualnu kotrolu te ostale kontrole predviđene u točki 1. ovog programa. Prilikom izvođenja zavarivačkih radova potrebno je voditi računa da elementi konstrukcije nakon hlađenja ne poprime neželjeni deformirani oblik. Ne dopušta se zavrivanje na temperaturi nižoj od 0°C. Za radove koji nakon potpunog sklapanja konstrukcije neće biti vidljivi, potrebno je napisati zapisnik o preuzimanju u trenutku dostupnosti pregledanju svih dijelova konstrukcije (posebna pozornost na ležajeve).

***Dokazi kvalitete prije početka izrade čelične konstrukcije***

Prije početka izrade čelične konstrukcije potrebno je posjedovati sljedeće:
- rješenja za voditelja izrade i montaže čelične nosive konstukcije
- atesti materijala od kojih će biti izrađena čelična konstrukcija,
- atesti za spojni materijal (vijci, elektrode),
- svjedodžbe tehnologa zavarivanja i zavarivača koji će raditi na ovoj konstrukciji,
- tehnologija izrade (tehnologija zavarivanja),
- tehnologija montaže,
- plan kontrole.

Ova dokumentacija ovjerena po nadzornom inženjeru odnosno projektantu sastavni je dio dokumenata za tehnički pregled konstrukcije.

Ukoliko se materijal nabavlja tijekom rada, potrebno je ateste materijala prije početka izrade dostaviti nadzornom inženjeru na ovjeru.

***Kontrola u toku izrade, transporta i montaže***

Tijekom izrade kontrukcije u radionici i montaže izvoditelj je dužan voditi zakonom propisane dnevnike i provoditi svoju kontrolu u skladu s planom kontrole. Dužnost je nadzornog inžnjera kontrolirati izvedbu u svim fazama izrade i montaže, tj. usklađenost s tehničkom dokumentacijom i važećim tehničkim normama i pravilima, ovjeravati navedene dokumente i ateste, te zapisnik o preuzimanju elemenata u radionici prije isporuke na montažu. Sve izmjene u dimenzijama ili načinu spajanja elemenata moraju biti ovjerene od projektanata konstrukcije.

***Fazne kontrole (fazni tehnički pregledi) koji se provide u toku izvedbe čelične konstrukcije***

Izvedba čelične konstrukcije ima sljedeće faze:

- izrada elemenata u radionici,
- transport od radionice na gradilište,
- montaža čelične konstr. na gradilištu na prethodno pripremljenu sidrenu konstrukciju (temelje ili dijelove zgrade).

U pravilu se svaka faza mora pregledati i utvrditi da je izvedena prema tehničkoj dokumentaciji i prema važećim tehničkim propisima. Izvršenje fazne kontrole potvrđuju putem zapisnika odgovorne osobe projektanta, stručnog nadzora i izvoditelja. dok se ne uklone nedostaci utvrđeni u nekoj fazi, u pravilu ne može započeti iduća faza.

Fazni pregledi sa zapisnicima potpisanim od strane odgovornih imenovanih osoba su:

- kontrola dokaza kvalitete prije početka izrade konstrukcije,
- prijem čelične konstrukcije po izradi u radionici,
- prijem čelične konstrukcije po transportu na gradilištu,
- geodetska kontrola izvedene sidrene konstrukcije ili drugih dijelova konstrukcije na koju se montira čelična konstrukcija,
- geodetska kontrola montirane čelične konstrukcije,
- završni pregled čelične konstrukcije prije početka drugih radova na čeličnoj konstrukciji (pokrivanje, oblaganje, montaža instalacija ili opreme i drugo).

Prijem elemenata obavlja se na temelju radioničkih crteža i specifikacija.

Kontrola i prijem čelične konstrukcije vrši se prema Pravilniku o tehničkim mjerama i uvjetima za montažu čeličnih kostrukcija. Sve daljnje aktivnosti prigodom transporta, skladištenja i montažnih radova moraju biti u skladu s navedenim Pravilnikom. Posebno se naglašava potreba pažljivog postupanja prigodom utovara, istovara i transporta dijelova konstrukcije.

Dijelovi konstrukcije ne smiju se odlagati neposredno na zemlju nego na drvene grede i sl.
Dijelovi konstrukcije se slažu tako da se omogući lagano pronalaženje pozicija i pristup zbog dizanja i transporta.

Prigodom prijema u radionici izvoditelj radova na izradi čelične konstrukcije dužan je staviti na uvid potrebnu tehničku dokumentaciju:

- radioničke nacrte sa specifikacijama,
- ateste osnovnog materijala,
- ateste dodatnog materijala,
- ateste zavarivača,
- ateste priključnih elemenata,
- dnevnik izrade elemenata,
- dnevnik zavarivanja,
- podatke o tehnologiji zavarivanja,
- izvješće interne tehničke kontrole,
- uvjerenja o kvalifikacijama stručnih osoba koje sudjeluju u izradi konstrukcije.

Završnom pregledu po montaži u pravilu sudjeluje i rukovoditelj ili koordinator izgradnje cjelokupne građevine.

***Antikorozivna zaštita***

Antikorozivna zaštita u svemu se provodi prema uvjetima u projektnoj dokumentaciji i u skladu s važećom normom.

Izvođenje radova zahtijeva isti postupak kao i sama čelična konstrukcija; kontrola i dokazi kvalitete predmet su istih faznih pregleda.

***Tehnički pregled konstrukcije u sklopu pregleda građevine***

Nakon izvedbe građevine prema Zakonu o gradnji provodi se postupak Tehničkog pregleda. Stručnoj komisiji za tehnički pregled izvedene građevine predočuje se sva projektna dokumentacija i dokumentacija praćenja izvedbe sa svim elaboriranim dokazima kvlaitete i izvještajima o izvršenim ispitivanjima i pregledima.

***Održavanje i praćenje čelične nosive konstrukcije za vrijeme korištenja građevine***

Investitor ili korisnik građevine dužan je voditi brigu o stabilnosti konstrukcije za vrijeme korištenja građevine provoditi slijedeće:

- izraditi program održavanja čelične konstrukcije,
- voditi evidenciju o čeličnoj konstrukciji putem knjige (servisne knjige) čelične konstrukcije,
- svake godine obaviti redoviti pregled,
- svakih deset godina obaviti glavni pregled,
- provoditi radove obnove ili sanacije čelične konstrukcije utvrđene pregledima, a prema zakonima i propisima.

Projektant konstrukcije:

Ozren Sudić, dipl.ing.građ.