

## Lamela A1-A2

### Kontrola nosivosti prečki

#### Detalj 1 - prečke u zidu u osi 4

Sve prečke u zidu su dimenzija 20/84 cm, raspona  $L = 1.01$  m. Svi zidovi su od betona MB 40. Maksimalna transverzalna sila se javlja u prečki na koti +11,20 na dijelu J-K i iznosi 762 kN (prilog, strana A1-A2/2). Maksimalni napon smicanja je:

$$\tau_n = \frac{762}{0,9 \times 20 \times 78} = 0,543 \frac{kN}{cm^2} = 5,43 MPa < 5\tau_r = 6,5 MPa$$

Sve prečke su armirane poprečnom armaturom U $\emptyset$ 10/15. Nosivost prečki u odnosu na ovako usvojenu armaturu je

$$T_{u,u} = 2 \times \frac{0.785 \times 100}{15} \times 50 = 524 kN$$

Prečke u kojima je ova sila prekoračena su ojačane karbonskom tkaninom, prema detalju 1 u prilogu. Za ojačanje se koristi SikaWrap-230 C tkanina debljine 0,131 mm, sa maksimalnim računskim naponom od 2300 MPa.

Usvojena tkanina prema detalju 1 (4 jednostruke trake širine 10 cm) može prihvatiti silu od

$$T_{u,t} = 4 \times 2 \times 0.0131 \times 10 \times 230 = 241 kN$$

Ukupna sila koju mogu prihvatiti uzengije i tkanina je

$$T_{u,u} + T_{u,t} = 524 + 241 = 765 kN > 762 kN = \max T_u$$

Prianjanje tkanine je obezbeđeno postavljanjem laminata Sika CarboDur Lamelle.

Sila koju može prihvatiti jednostruka traka širine 10 cm, debljine 0,131 mm je:

$$T_{u,t}^{(1)} = 0,0131 \times 10 \times 230 = 30,1 kN$$

Širina laminata se usvaja tako da ne bude prekoračen napon prianjanja od 2,3 MPa (MB 40).

Usvojen je laminat Sika CarboDur Lamelle S 1012, dužine 110 cm, širine 10 cm, debljine 1,2 mm:

$$\tau_p = \frac{4 \times 30,1}{110 \times 10} = 0,11 \frac{kN}{cm^2} < 0,23 \frac{kN}{cm^2}$$

#### Detalj 2 - prečke u zidu u osi 6

Sve prečke u zidu su dimenzija 20/100 cm, raspona  $L = 1.10$  m. Maksimalna transverzalna sila se javlja u prečki na koti +14,20 na dijelu D-E i iznosi 683 kN (vidjeti prilog, strana A1-A2/3).

Maksimalni napon smicanja je:

$$\tau_n = \frac{683}{0,9 \times 20 \times 94} = 0,404 \frac{kN}{cm^2} = 4,04 MPa < 5\tau_r = 6,5 MPa$$

Nosivost uzengija i način ojačanja je u svemu isti kao u zidu u osi 4, pa se prema detalju 2 ojačavaju prečke na +8,20 do +17,20 između osa D i E.

### Ojačanje zidova

Ojačanje zidova u osama C, E, G i L je sprovedeno tako što je nedostajuća količina vertikalne armature kompenzovana karbonskom tkaninom SikaWrap-230 C tkanina debljine 0,131 mm, sa maksimalnim računskim naponom od 2300 MPa.

#### Detalj 3 - zid u osi C (dio iznad otvora u polju 1-4 na koti +5,20)

Ovaj dio zida je armiran uzengijama UØ12/15. Maksimalno potrebna površina armature u zidu je  $\pm 11,83 \text{ cm}^2/\text{m}$  (strana A1-A2/4, presjek 1-1). Potrebna površina tkanine na jednom licu zida je:

$$A_{a,t} = (11,83 - 7,54) \times \frac{500}{2300} = 0,93 \frac{\text{cm}^2}{\text{m}}$$

Za usvojenu dvostruku tkaninu širine 15 cm potrebno osno rastojanje traka je:

$$e = \frac{2 \times 15 \times 0,0131}{0,93} = 0,42 \text{ m}$$

Usvojeno je ojačanje prema detalju 3 u prilogu, dvostrukom tkaninom širine 15 cm na osnom rastojanju od 40 cm. Ukupna ekvivalentna površina armature i tkanine na jednom licu zida je:

$$A_{a,u} + A_{a,t} = 7,54 + \frac{2 \times 15 \times 0,0131}{0,40} \times \frac{2300}{500} = 7,54 + 4,52 = 12,06 \frac{\text{cm}^2}{\text{m}} > 11,83 \frac{\text{cm}^2}{\text{m}}$$

Sila koju može prihvatiti dvostruka traka širine 15 cm, debljine 0,131 mm je:

$$T_{u,t}^{(1)} = 2 \times 0,0131 \times 15 \times 230 = 90,4 \text{ kN}$$

Usvojen je laminat Sika CarboDur Lamelle S 1512, dužine 360 cm, širine 15 cm, debljine 1,2 mm:

$$\tau_p = \frac{9 \times 90,4}{360 \times 15} = 0,151 \frac{\text{kN}}{\text{cm}^2} < 0,23 \frac{\text{kN}}{\text{cm}^2}$$

#### Detalj 4 - zid u osi C (dio ispod otvora u polju 1-4 na koti -0,08)

Postojeća armatura: UØ10/15. Maksimalno potrebna površina armature u zidu je  $\pm 7,41 \text{ cm}^2/\text{m}$  (strana A1-A2/4, presjek 3-3). Potrebna površina tkanine na jednom licu zida je:

$$A_{a,t} = (7,41 - 5,24) \times \frac{500}{2300} = 0,47 \frac{\text{cm}^2}{\text{m}}$$

Za usvojenu jednostruku tkaninu širine 15 cm potrebno osno rastojanje traka je:

$$e = \frac{15 \times 0,0131}{0,47} = 0,42 \text{ m}$$

Usvojeno je ojačanje prema detalju 4 u prilogu, jednostrukom tkaninom širine 15 cm na osnom rastojanju od 40 cm. Ukupna ekvivalentna površina armature i tkanine na jednom licu zida je:

$$A_{a,u} + A_{a,t} = 5,24 + \frac{15 \times 0,0131}{0,40} \times \frac{2300}{500} = 5,24 + 2,26 = 7,50 \frac{\text{cm}^2}{\text{m}} > 7,41 \frac{\text{cm}^2}{\text{m}}$$

Sila koju može prihvatiti jednostruka traka širine 15 cm, debljine 0,131 mm je:

$$T_{u,t}^{(1)} = 0,0131 \times 15 \times 230 = 45,2 \text{ kN}$$

Usvojen je laminat Sika CarboDur Lamelle S 512, dužine 360 cm, širine 5 cm, debljine 1,2 mm:

$$\tau_p = \frac{9 \times 45,2}{360 \times 5} = 0,226 \frac{\text{kN}}{\text{cm}^2} < 0,23 \frac{\text{kN}}{\text{cm}^2}$$

#### **Detalj 5 - zid u osi C, zid u osi E (dio uz osu 4 u prizemlju)**

Postojeća armatura:  $\pm \emptyset 10/15$  (zid C), odnosno  $\pm Q524$  (zid E). Maksimalno potrebna površina armature u zidu C je  $\pm 6,88 \text{ cm}^2/\text{m}$  (strana A1-A2/5, presjek 5-5) a u zidu E je  $\pm 5,87 \text{ cm}^2/\text{m}$  (strana A1-A2/6, presjek 10-10). Potrebna površina tkanine na jednom licu zida je:

$$A_{a,t} = (6,88 - 5,24) \times \frac{500}{2300} = 0,36 \frac{\text{cm}^2}{\text{m}}$$

Za usvojenju jednostruku tkaninu širine 15 cm potrebno osno rastojanje traka je:

$$e = \frac{15 \times 0,0131}{0,36} = 0,55 \text{ m}$$

Usvojeno je ojačanje prema detalju 5 u prilogu, jednostrukom tkaninom širine 15 cm na osnom rastojanju od 50 cm. Ukupna ekvivalentna površina armature i tkanine na jednom licu zida je:

$$A_{a,u} + A_{a,t} = 5,24 + \frac{15 \times 0,0131}{0,5} \times \frac{2300}{500} = 5,24 + 1,81 = 7,04 \frac{\text{cm}^2}{\text{m}} > 6,88 \frac{\text{cm}^2}{\text{m}}$$

Sila koju može prihvatiti jednostruka traka širine 15 cm, debljine 0,131 mm je:

$$T_{u,t}^{(1)} = 0,0131 \times 15 \times 230 = 45,2 \text{ kN}$$

Usvojen je laminat Sika CarboDur Lamelle S 512, dužine 150 cm, širine 5 cm, debljine 1,2 mm:

$$\tau_p = \frac{3 \times 45,2}{150 \times 5} = 0,181 \frac{\text{kN}}{\text{cm}^2} < 0,23 \frac{\text{kN}}{\text{cm}^2}$$

#### **Detalj 6 - zid u osi E (dio 1-4 u prizemlju)**

Postojeća armatura:  $\pm Q524$ . Maksimalno potrebna površina armature je  $\pm 8,80 \text{ cm}^2/\text{m}$  (strana A1-A2/6, presjek 8-8). Potrebna površina tkanine na jednom licu zida je:

$$A_{a,t} = (8,80 - 5,24) \times \frac{500}{2300} = 0,77 \frac{\text{cm}^2}{\text{m}}$$

Za usvojenju dvostruku tkaninu širine 15 cm potrebno osno rastojanje traka je:

$$e = \frac{2 \times 15 \times 0,0131}{0,77} = 0,51 \text{ m}$$

Usvojeno je ojačanje prema detalju 6 u prilogu, dvostrukom tkaninom širine 15 cm na osnom rastojanju od 50 cm. Ukupna ekvivalentna površina armature i tkanine na jednom licu zida je:

$$A_{a,u} + A_{a,t} = 5,24 + \frac{2 \times 15 \times 0,0131}{0,50} \times \frac{2300}{500} = 5,24 + 3,62 = 8,86 \frac{\text{cm}^2}{\text{m}} > 8,80 \frac{\text{cm}^2}{\text{m}}$$

Sila koju može prihvatiti dvostruka traka širine 15 cm, debljine 0,131 mm je:

$$T_{u,t}^{(1)} = 2 \times 0,0131 \times 15 \times 230 = 90,4 \text{ kN}$$

Usvojen je laminat Sika CarboDur Lamelle S 1012, dužine 450 cm, širine 10 cm, debljine 1,2 mm:

$$\tau_p = \frac{9 \times 90,4}{450 \times 10} = 0,181 \frac{\text{kN}}{\text{cm}^2} < 0,23 \frac{\text{kN}}{\text{cm}^2}$$

### Detalj 7 - zid u osi G

Postojeća armatura:  $\pm$  Q524. Maksimalno potrebna površina armature je  $\pm 6,88 \text{ cm}^2/\text{m}$  (strana A1-A2/7, presjek 12-12). Potrebna površina tkanine na jednom licu zida je:

$$A_{a,t} = (6,88 - 5,24) \times \frac{500}{2300} = 0,36 \frac{\text{cm}^2}{\text{m}}$$

Za usvojenu jednostruku tkaninu širine 15 cm potrebno osno rastojanje traka je:

$$e = \frac{15 \times 0,0131}{0,36} = 0,55 \text{ m}$$

Usvojeno je ojačanje prema detalju 7 u prilogu, jednostrukom tkaninom širine 15 cm na osnovom rastojanju od 55 cm. Ukupna ekvivalentna površina armature i tkanine na jednom licu zida je:

$$A_{a,u} + A_{a,t} = 5,24 + \frac{15 \times 0,0131}{0,55} \times \frac{2300}{500} = 5,24 + 1,64 = 6,88 \frac{\text{cm}^2}{\text{m}}$$

Sila koju može prihvatiti jednostruka traka širine 15 cm, debljine 0,131 mm je:

$$T_{u,t}^{(1)} = 0,0131 \times 15 \times 230 = 45,2 \text{ kN}$$

Usvojen je laminat Sika CarboDur Lamelle S 512, dužine 200 cm, širine 5 cm, debljine 1,2 mm:

$$\tau_p = \frac{4 \times 45,2}{200 \times 5} = 0,181 \frac{\text{kN}}{\text{cm}^2} < 0,23 \frac{\text{kN}}{\text{cm}^2}$$

### Detalj 8 - zid u osi L

Postojeća armatura:  $\pm$  Q221. Maksimalno potrebna površina armature je  $\pm 3,36 \text{ cm}^2/\text{m}$  (strana A1-A2/9, presjek 19-19). Potrebna površina tkanine na jednom licu zida je:

$$A_{a,t} = (3,36 - 2,21) \times \frac{500}{2300} = 0,25 \frac{\text{cm}^2}{\text{m}}$$

Za usvojenu jednostruku tkaninu širine 15 cm potrebno osno rastojanje traka je:

$$e = \frac{15 \times 0,0131}{0,25} = 0,79 \text{ m}$$

Usvojeno je ojačanje prema detalju 7 u prilogu, jednostrukom tkaninom širine 15 cm na osnovom rastojanju od 55 cm. Ukupna ekvivalentna površina armature i tkanine na jednom licu zida je:

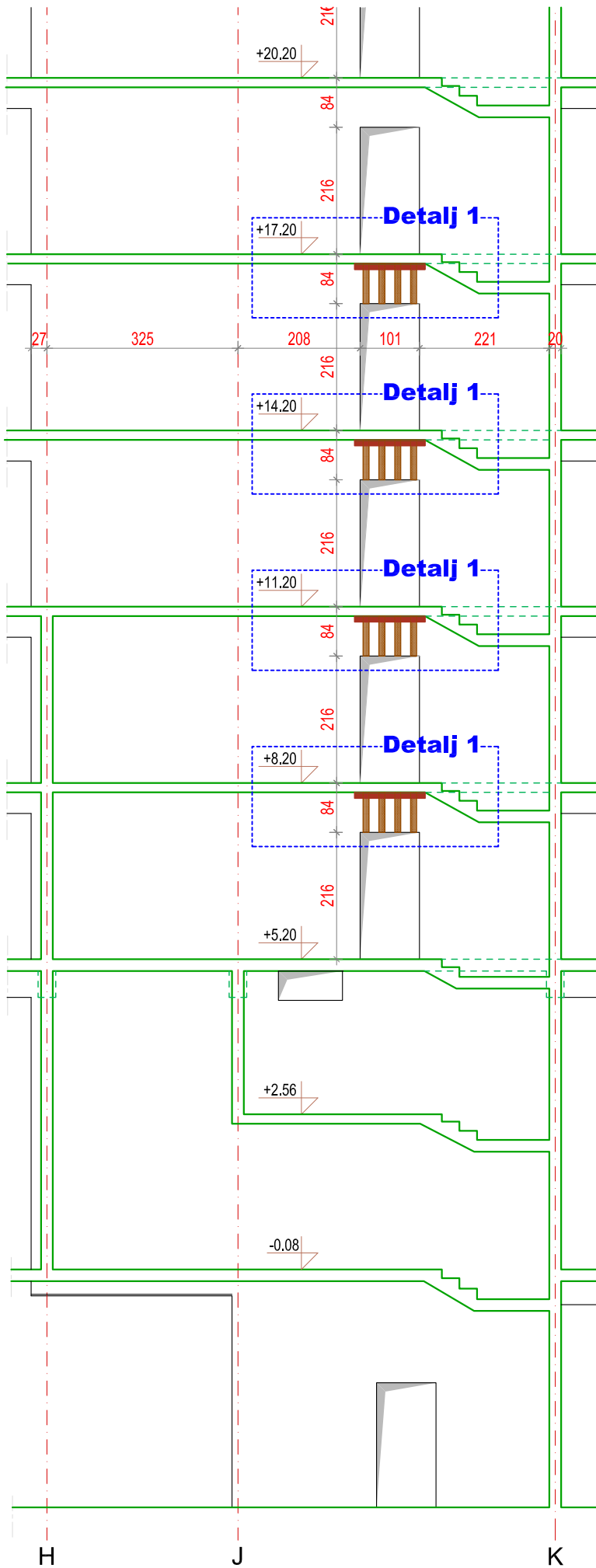
$$A_{a,u} + A_{a,t} = 2,21 + \frac{15 \times 0,0131}{0,55} \times \frac{2300}{500} = 2,21 + 1,64 = 3,85 \frac{\text{cm}^2}{\text{m}} > 3,36 \frac{\text{cm}^2}{\text{m}}$$

Sila koju može prihvatiti jednostruka traka širine 15 cm, debljine 0,131 mm je:

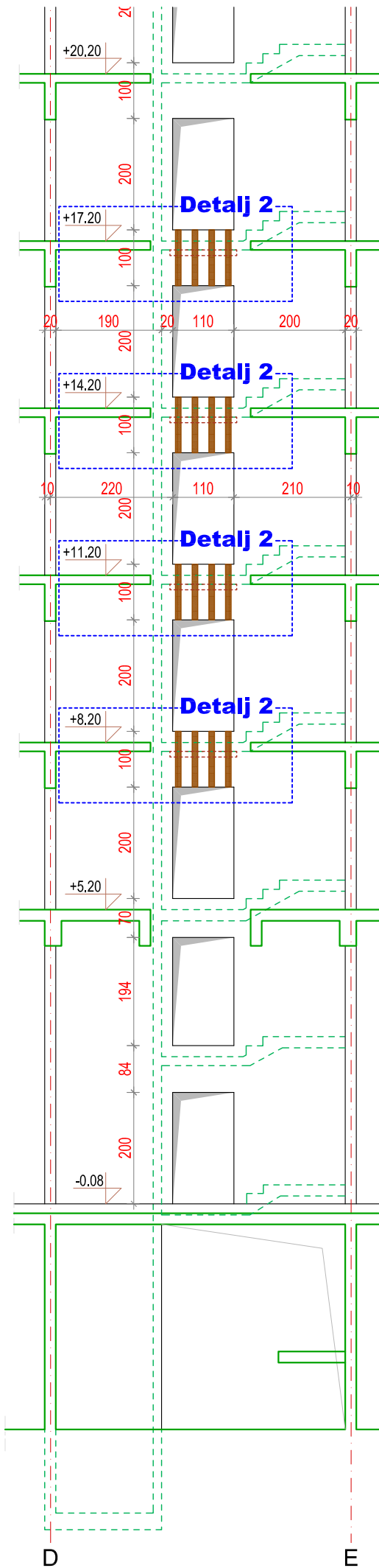
$$T_{u,t}^{(1)} = 0,0131 \times 15 \times 230 = 45,2 \text{ kN}$$

Usvojen je laminat Sika CarboDur Lamelle S 512, dužine 150 cm, širine 5 cm, debljine 1,2 mm:

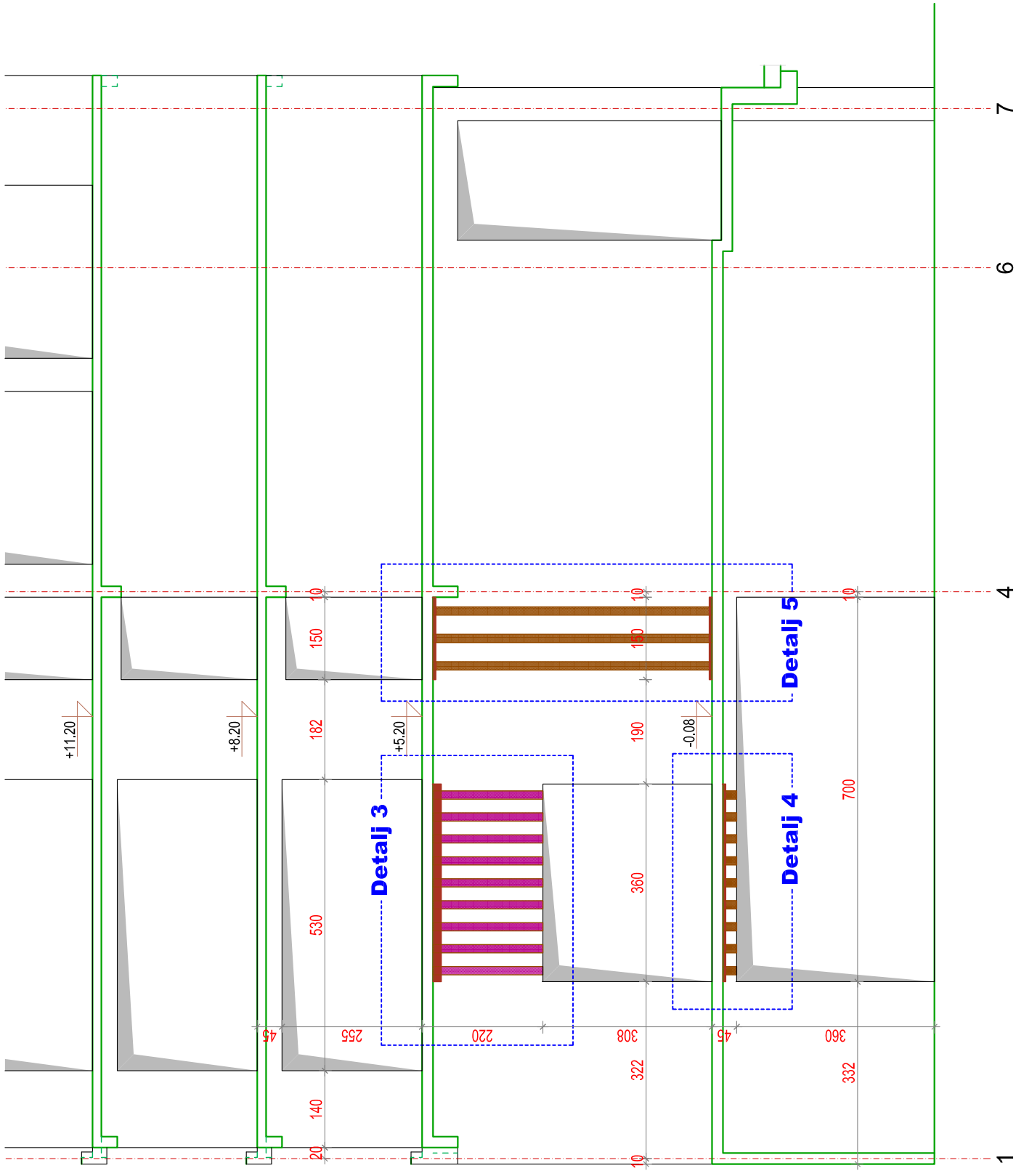
$$\tau_p = \frac{3 \times 45,2}{150 \times 5} = 0,181 \frac{\text{kN}}{\text{cm}^2} < 0,23 \frac{\text{kN}}{\text{cm}^2}$$



**LAMELA A1-A2**  
**ZID U OSI 4**  
**DIO H-J-K**

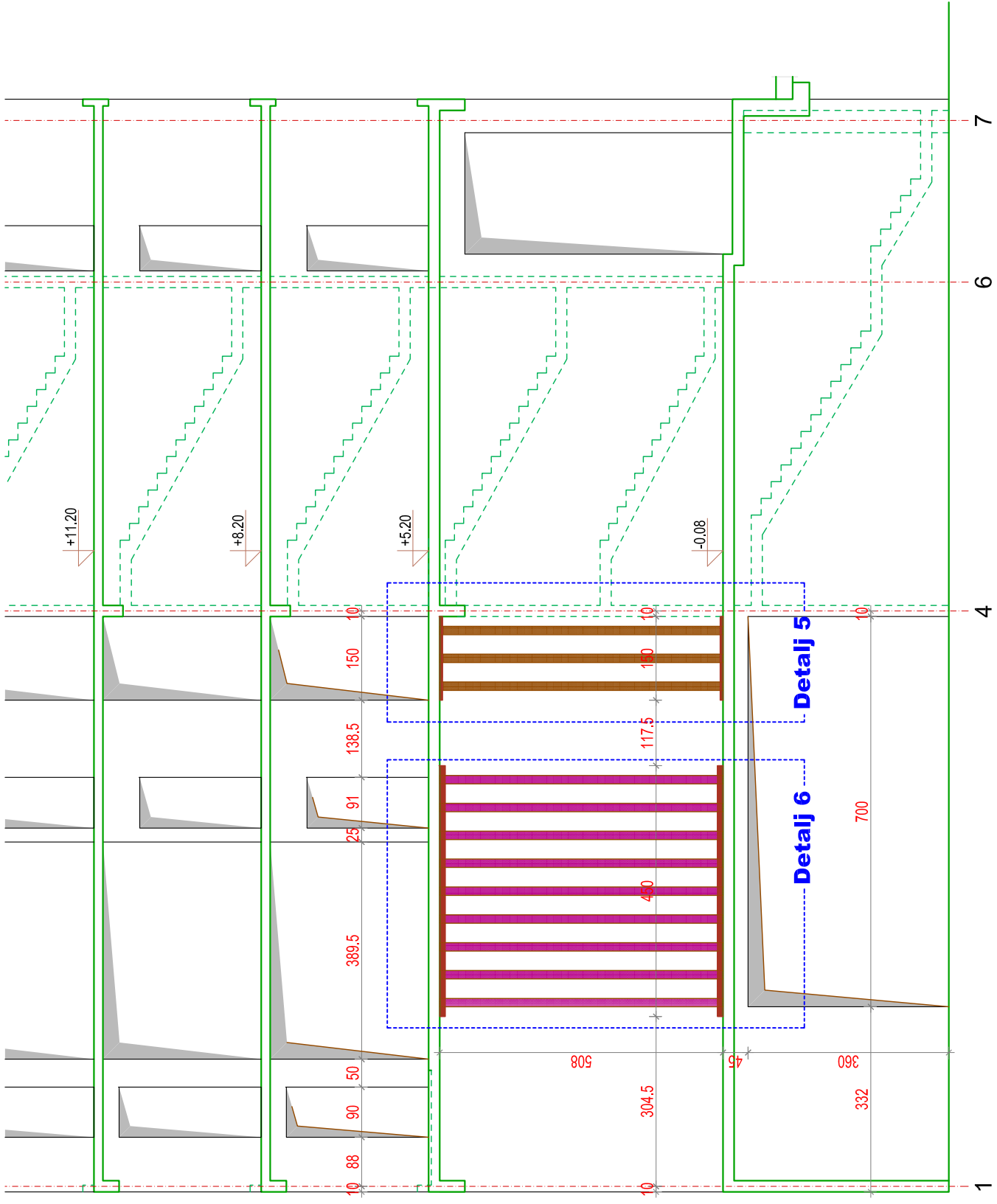


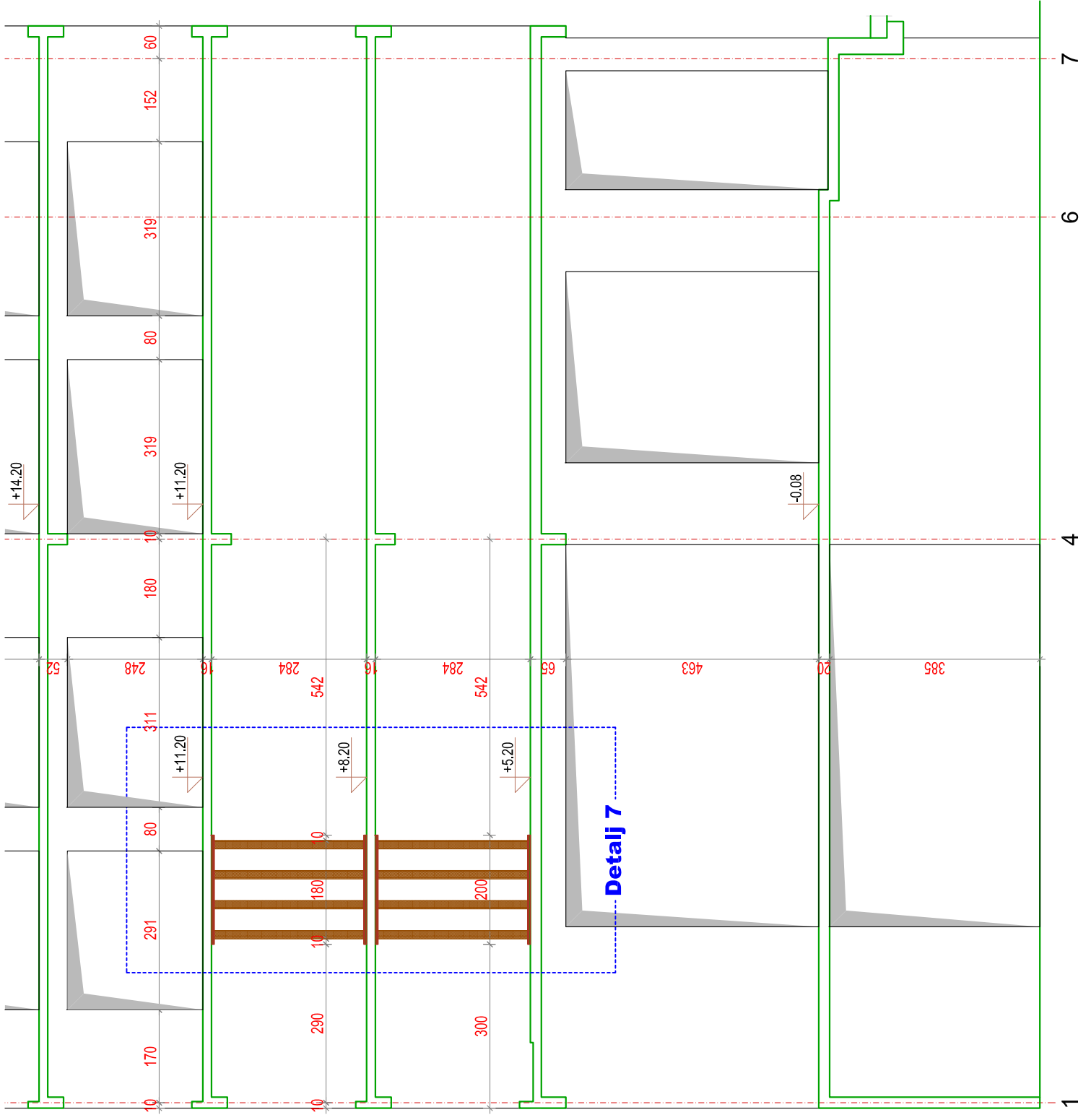
**LAMELA A1-A2**  
**ZID U OSI 6**  
**DIO D-E**



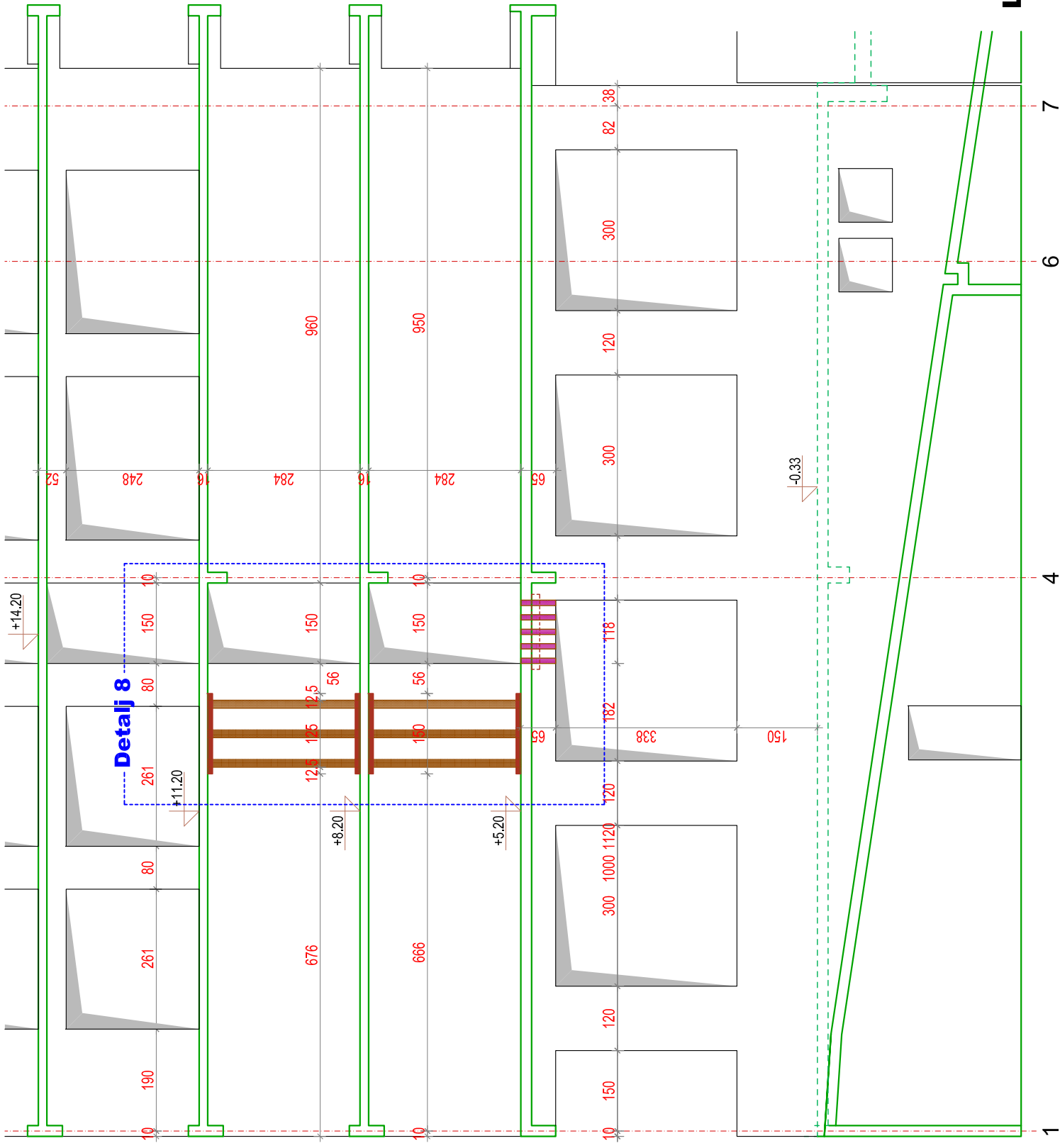
**LAMELA A1-A2**  
**ZID U OSI C**





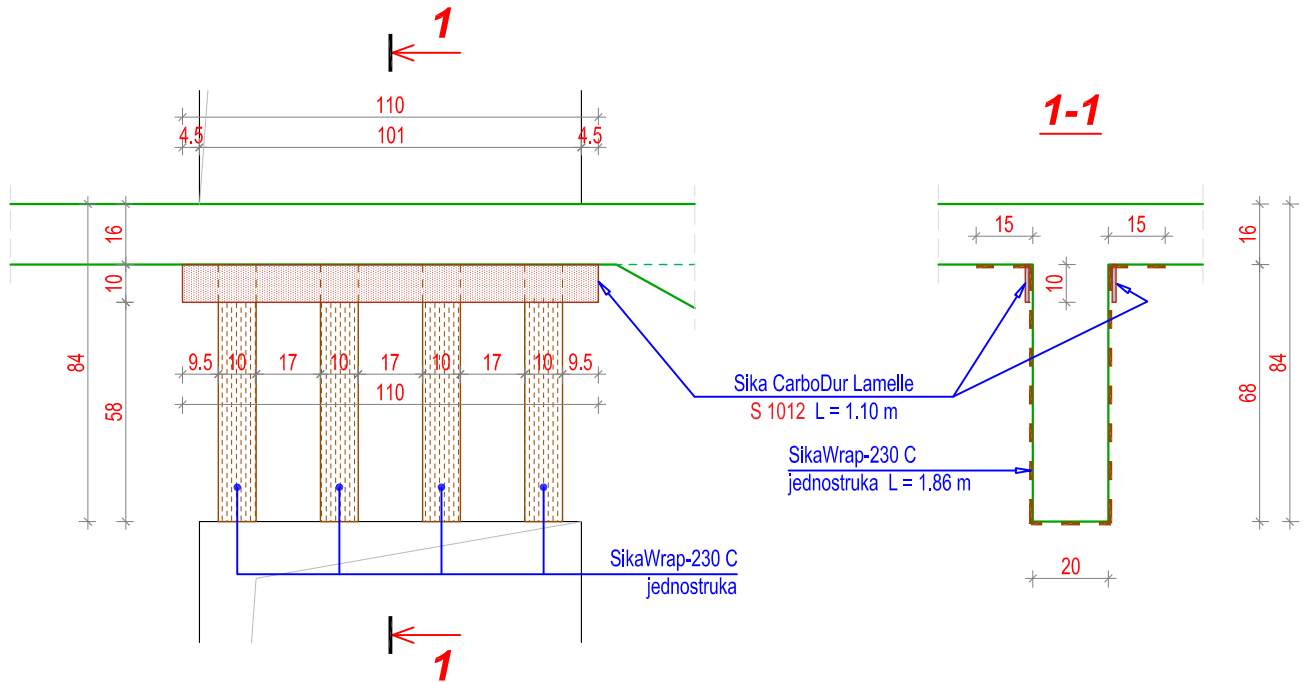


**LAMELA A1-A2**  
**ZID U OSI G**



**LAMELA A1-A2**  
**ZID U OSIL L**

## DETALJ 1 (4 kom.)



Ukupno za 4 **DETALJA 1**

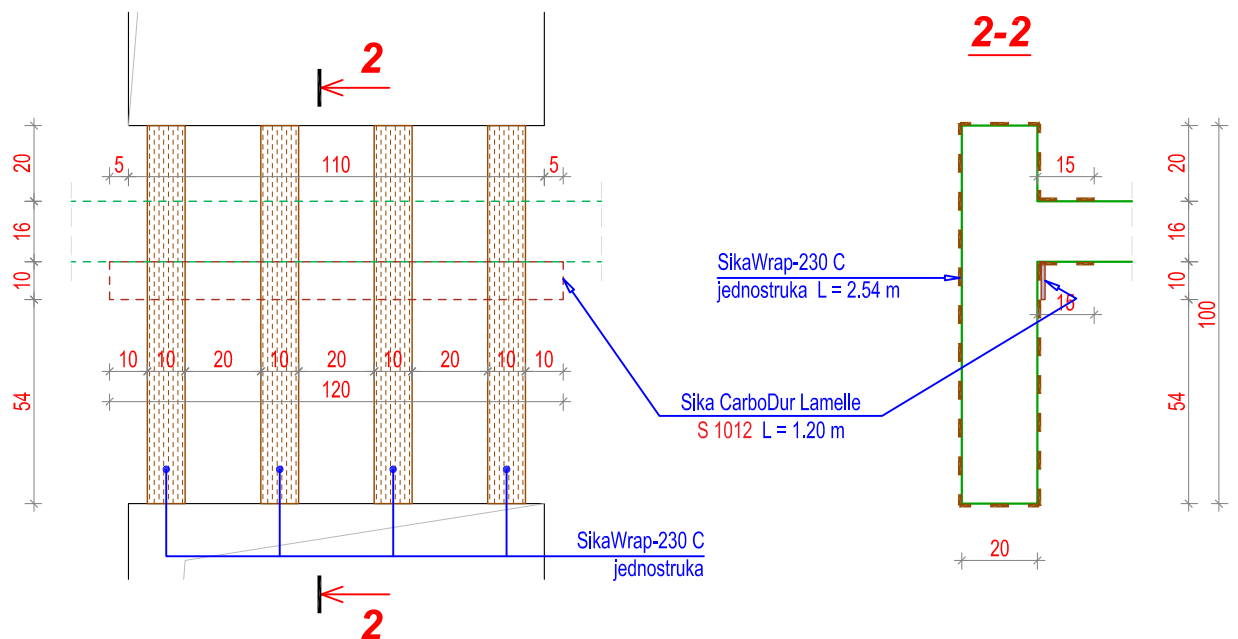
tkanine SikaWrap-230 C

$$4 \times 4 \times 1.86 \times 0.10 = 2.976 \text{ m}^2$$

laminata Sika CarboDur Lamelle S 1012:

$$4 \times 2 \times 1.10 = 8.800 \text{ m}^1$$

## DETALJ 2 (4 kom.)



Ukupno za 4 **DETALJA 2**

tkanine SikaWrap-230 C

$$4 \times 4 \times 2.54 \times 0.10 = 4.064 \text{ m}^2$$

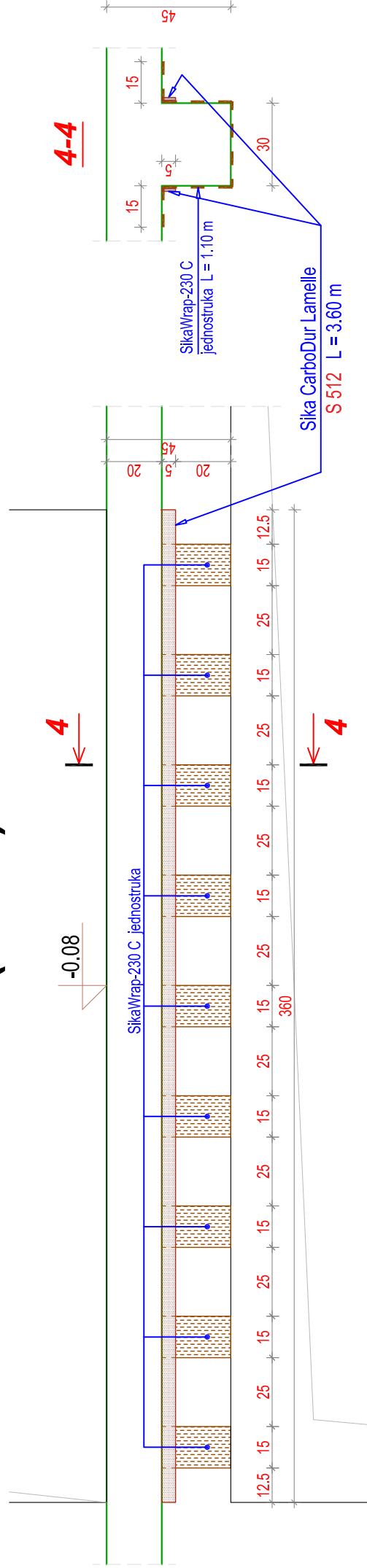
laminata Sika CarboDur Lamelle S 1012:

$$4 \times 1.20 = 4.800 \text{ m}^1$$

**LAMELA A1-A2**  
**ZIDOVI U OSAMA 4 i 6**  
**DETALJI 1 i 2**  
**R 1:20**



# DETALJ 4 (1 kom.)



Ukupno za **DETALJ 4**

tkanine **SikaWrap-230 C**

$$9 \times 1.10 \times 0.15 = 1.485 \text{ m}^2$$

laminata **Sika CarboDur Lamelle S 512:**

$$2 \times 3.60 = 7.200 \text{ m}^1$$

**LAMELA A1-A2**  
**ZID U OSI C**  
**DETALJ 4**  
**R 1:20**

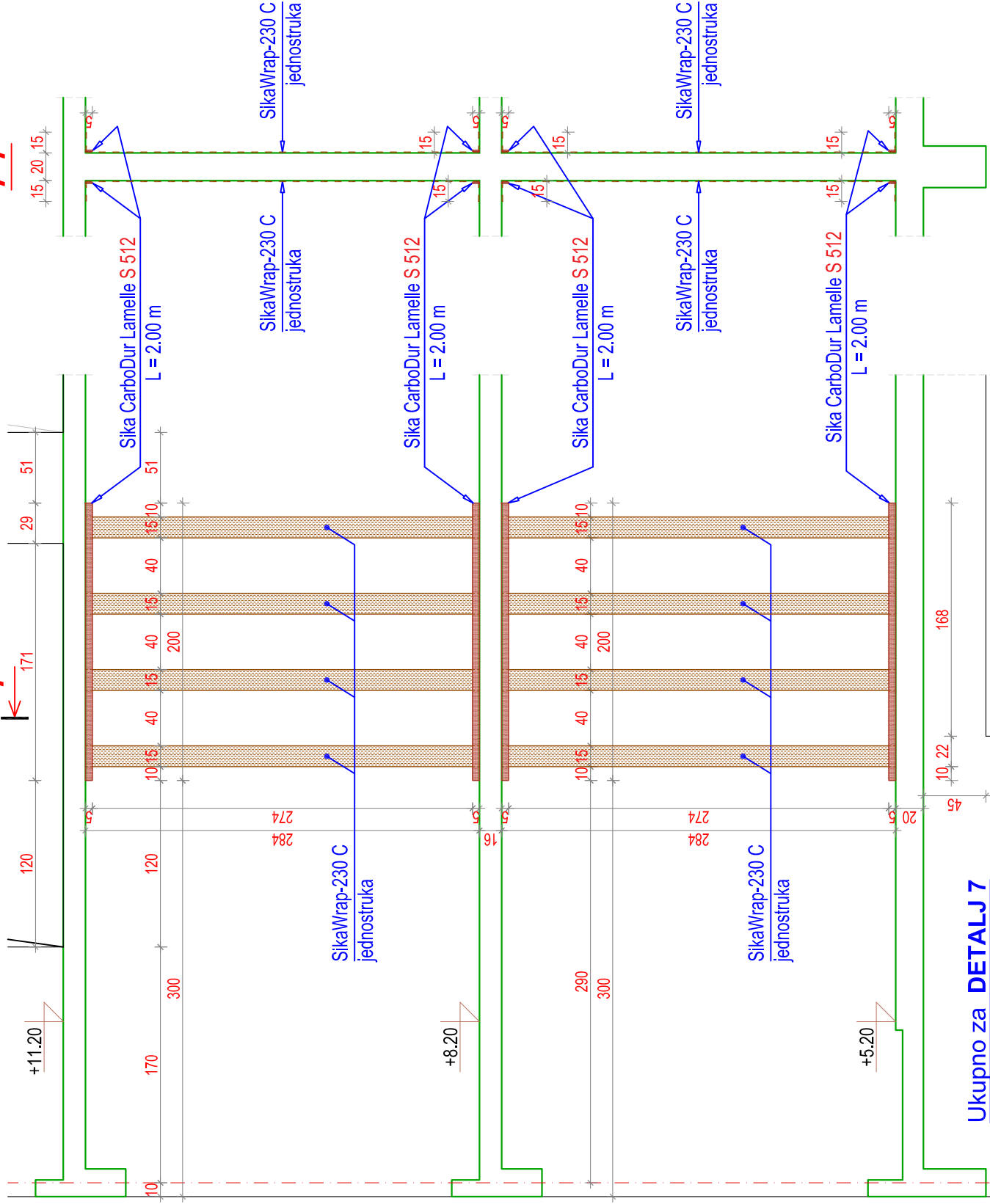






7-7

7



Ukupno za **DETALJ 7**

tkanine SikaWrap-230 C

laminata Sika CarboDur Lamelle S 512

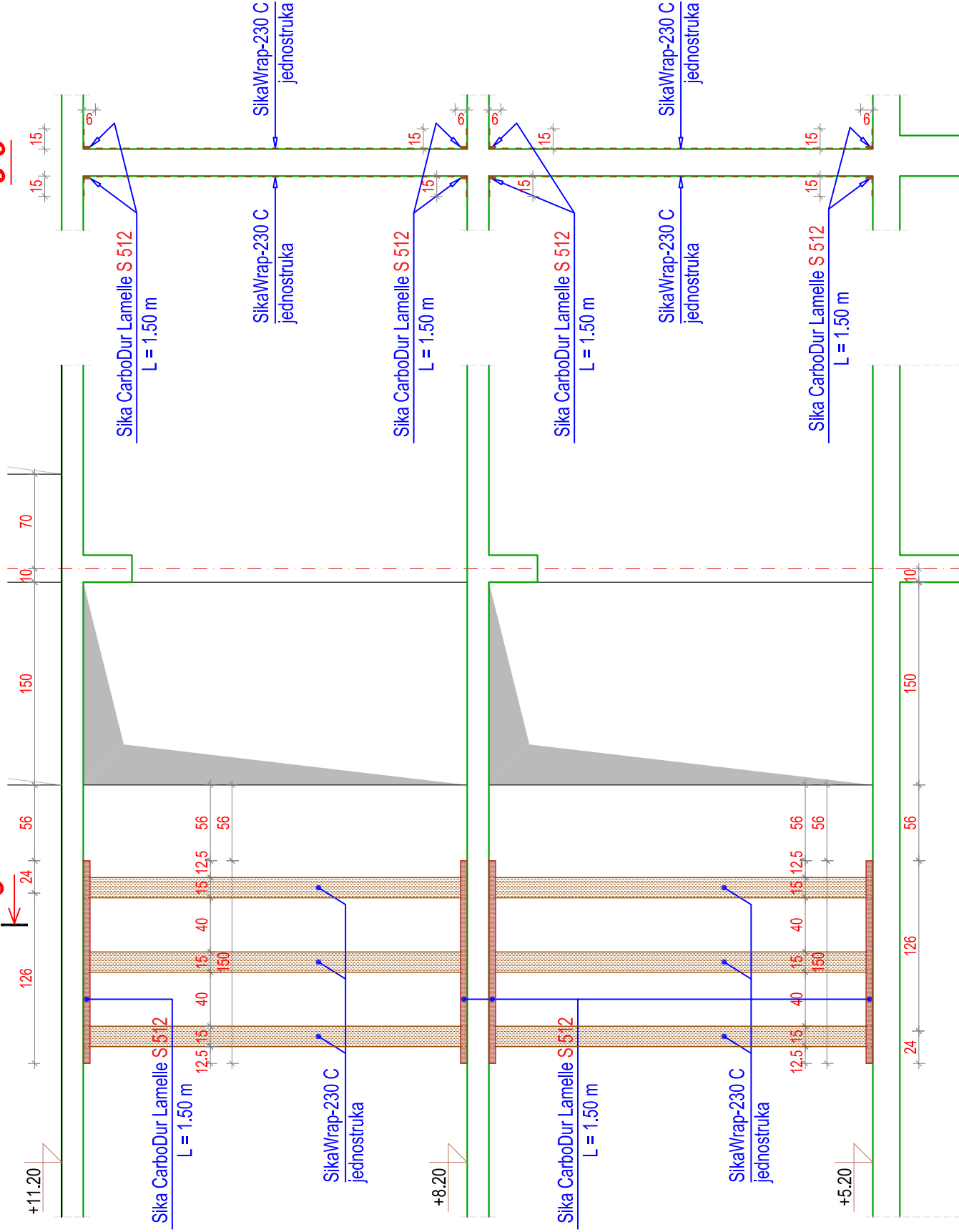
**7**  $2 \times 2 \times 4 \times 3.14 \times 0.15 = 7.536 \text{ m}^2$

$2 \times 2 \times 2 \times 2.0 = 16.000 \text{ m}^1$

**LAMELA A1-A2**  
**ZID U OSI G**  
**DETALJ 7**  
**R 1:40**

8

8-8



Ukupno za **DETALJ 8**

tkanine SikaWrap-230 C

laminata Sika CarboDur Lamelle S 512

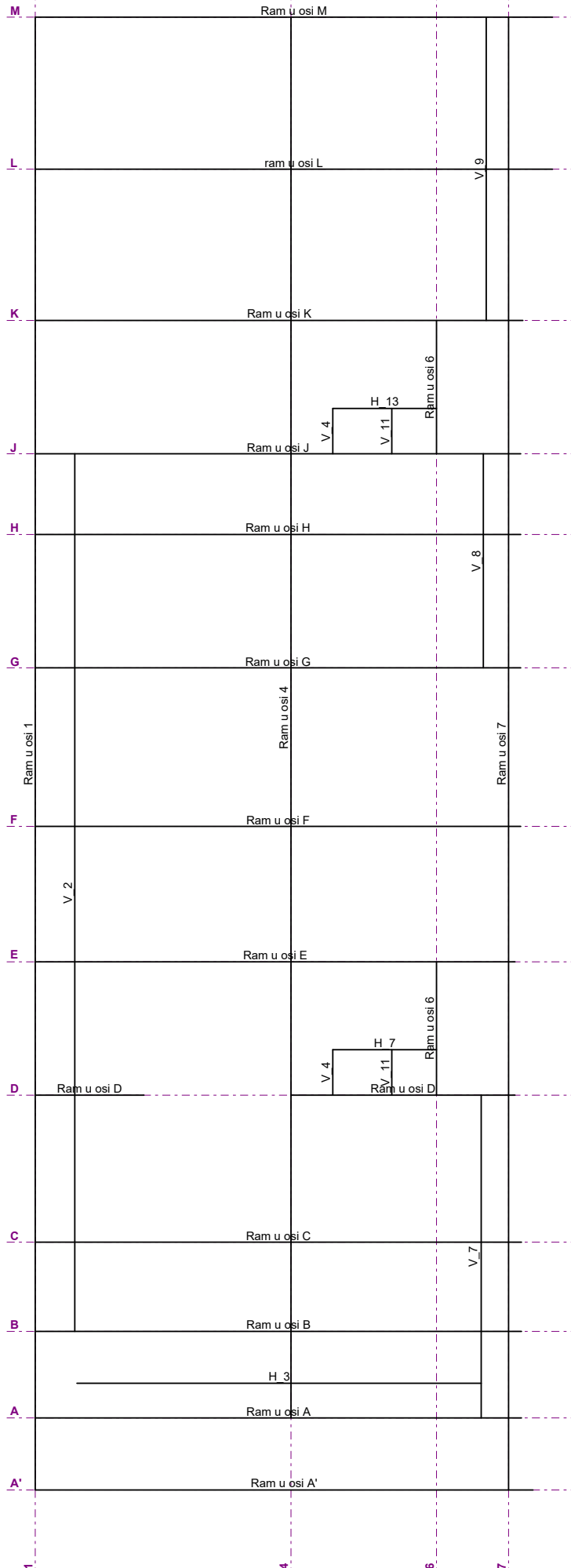
$2 \times 2 \times 3 \times 3,14 \times 0,15 = 5,652 \text{ m}^2$

$2 \times 2 \times 2 \times 1,5 = 12,000 \text{ m}^1$

4

**LAMELA A1-A2**  
**ZID U OSI L**  
**DETALJ 8**  
**R 1:40**

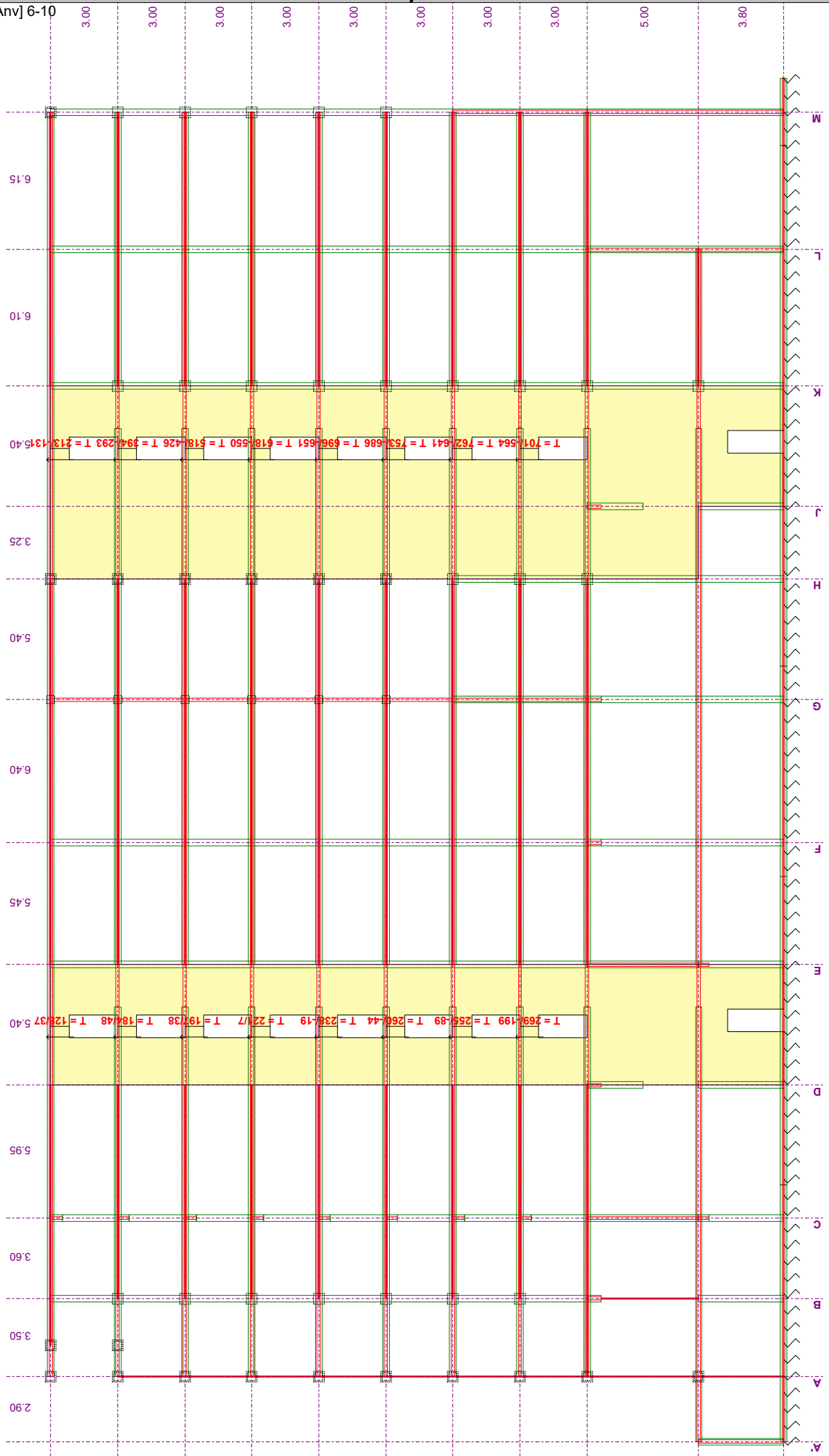
**Ulazni podaci - Konstrukcija**



Dispozicija ramova

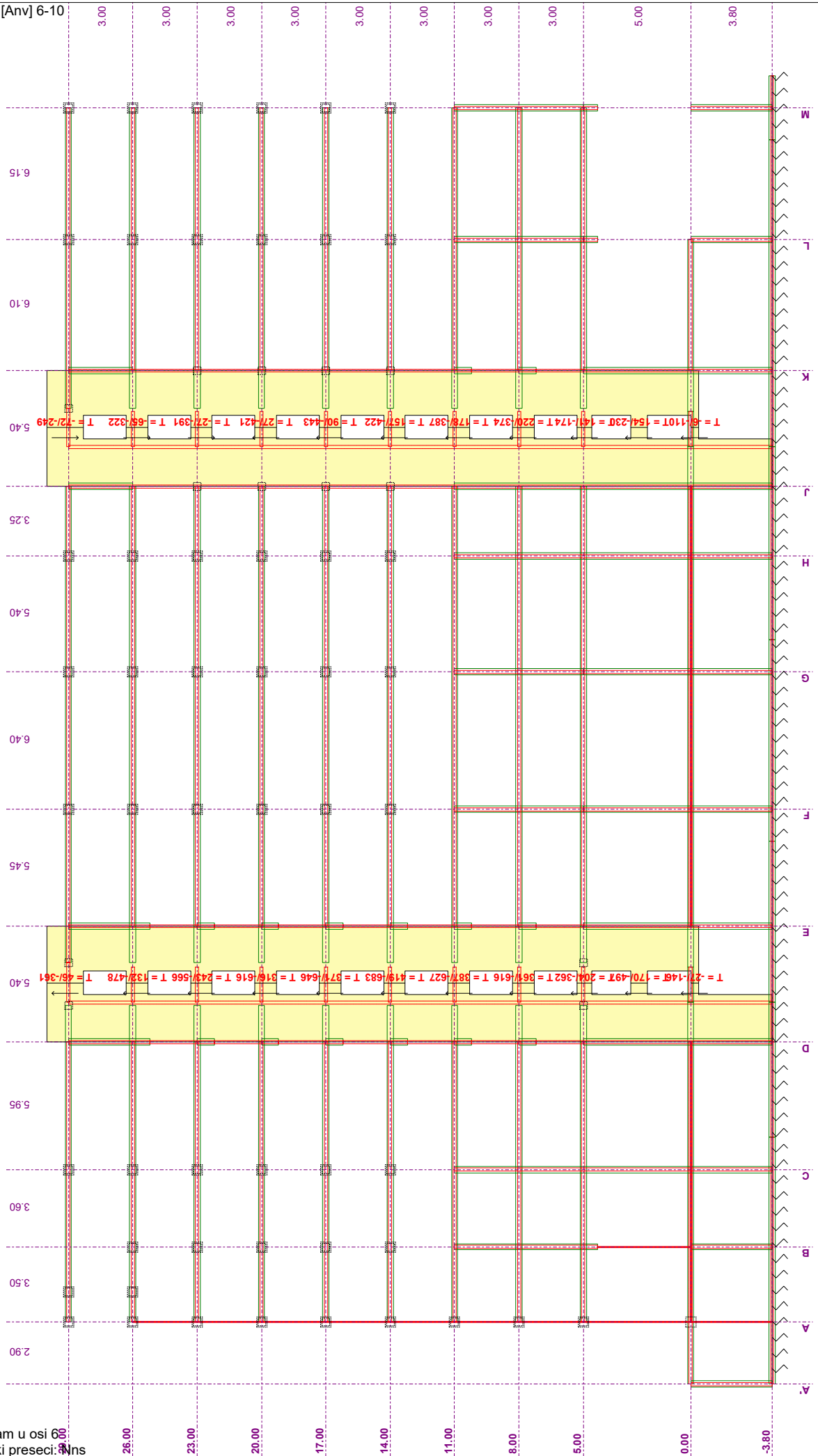
# Statički proračun

Opt. 16: [Anv] 6-10



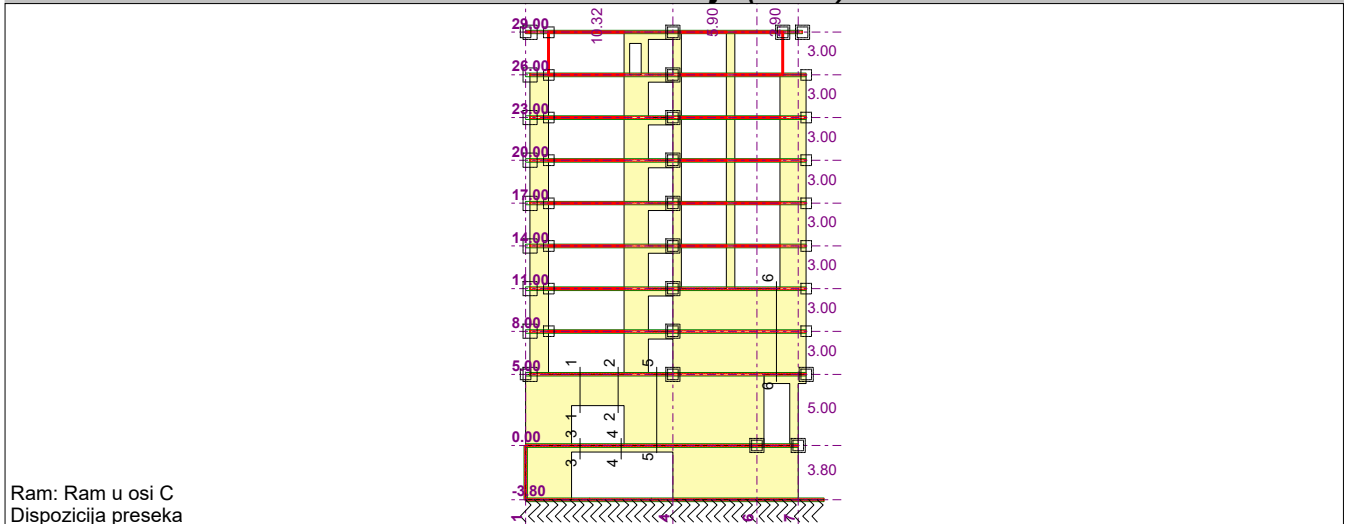
Ram: Ram u osi 2  
Vektorski presezi Nns

Opt. 16: [Anv] 6-10



Ram: Ram u osi 60  
 Vektorski presezi: 3

## Dimenzionisanje (beton)



### Presek 1 - 1 (X=3.81m)

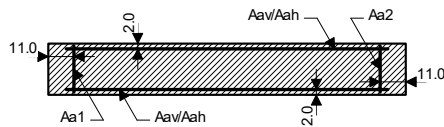
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

1.30xI+0.65xII+1.30xIII

Merodavna kombinacija za smicanje:

1.30xI+0.65xII-1.30xIII

Mu = -1418.98 kNm

Nu = -330.36 kN

Tu = -2366.25 kN

 $\epsilon_b/\epsilon_a = -1.535/10.000 \text{ ‰}$ Aa1 = 8.16 cm<sup>2</sup> (min:6.60)Aa2 = 8.16 cm<sup>2</sup> (min:6.60)Aav = ±1.50 cm<sup>2</sup>/m (min:±1.50)Aah = ±11.83 cm<sup>2</sup>/m (min:±2.00)

### Presek 2 - 2 (X=6.49m)

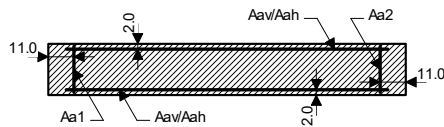
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

1.30xI+0.65xII+1.30xIII

Merodavna kombinacija za smicanje:

1.30xI+0.65xII-1.30xIII

Mu = 1936.45 kNm

Nu = 1034.13 kN

Tu = -1830.03 kN

 $\epsilon_b/\epsilon_a = -0.931/10.000 \text{ ‰}$ Aa1 = 26.83 cm<sup>2</sup> (min:6.60)Aa2 = 26.83 cm<sup>2</sup> (min:6.60)Aav = ±1.50 cm<sup>2</sup>/m (min:±1.50)Aah = ±9.15 cm<sup>2</sup>/m (min:±2.00)

### Presek 3 - 3 (X=3.86m)

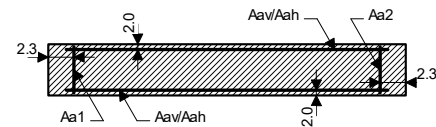
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 30/45 \text{ cm} \quad A_b = 1350 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

1.30xI+0.65xII+1.30xIII

Merodavna kombinacija za smicanje:

1.60xI+1.80xII

Mu = -125.56 kNm

Nu = -89.17 kN

Tu = -303.11 kN

 $\epsilon_b/\epsilon_a = -1.671/10.000 \text{ ‰}$ Aa1 = 4.46 cm<sup>2</sup> (min:2.03)Aa2 = 4.46 cm<sup>2</sup> (min:2.03)Aav = ±2.25 cm<sup>2</sup>/m (min:±2.25)Aah = ±7.41 cm<sup>2</sup>/m (min:±3.00)

### Presek 4 - 4 (X=6.70m)

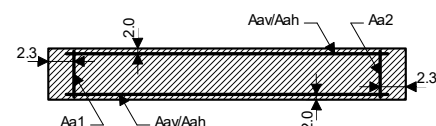
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 30/45 \text{ cm} \quad A_b = 1350 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

1.30xI+0.65xII+1.30xIII

Merodavna kombinacija za smicanje:

1.30xI+0.65xII-1.30xIII

Mu = 85.53 kNm

Nu = 820.77 kN

Tu = -30.31 kN

 $\epsilon_b/\epsilon_a = 0.146/10.000 \text{ ‰}$ Aa1 = 11.52 cm<sup>2</sup> (min:2.03)Aa2 = 11.52 cm<sup>2</sup> (min:2.03)Aav = ±2.25 cm<sup>2</sup>/m (min:±2.25)Aah = ±0.74 cm<sup>2</sup>/m (min:±3.00)

**Presek 5 - 5 (X=9.19m)**

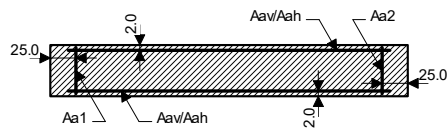
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/500 \text{ cm} \quad A_b = 10000 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI + 0.65xII + 1.30xIII$$

Merodavna kombinacija za smicanje:

$$1.60xI + 1.80xII$$

$$M_u = 816.20 \text{ kNm}$$

$$N_u = 837.38 \text{ kN}$$

$$T_u = 3127.61 \text{ kN}$$

$$\epsilon_b/\epsilon_a = -0.247/10.000 \text{ ‰}$$

$$A_{a1} = 5.28 \text{ cm}^2 \quad (\text{min: } 15.00)$$

$$A_{a2} = 5.28 \text{ cm}^2 \quad (\text{min: } 15.00)$$

$$A_{av} = \pm 1.50 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 6.88 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 6 - 6 (X=17.59m)**

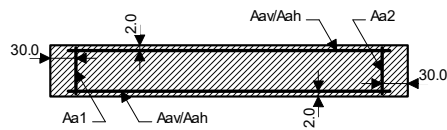
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/600 \text{ cm} \quad A_b = 12000 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII - 1.30xIII$$

$$M_u = -433.89 \text{ kNm}$$

$$N_u = -614.96 \text{ kN}$$

$$T_u = -1449.96 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 18.00)$$

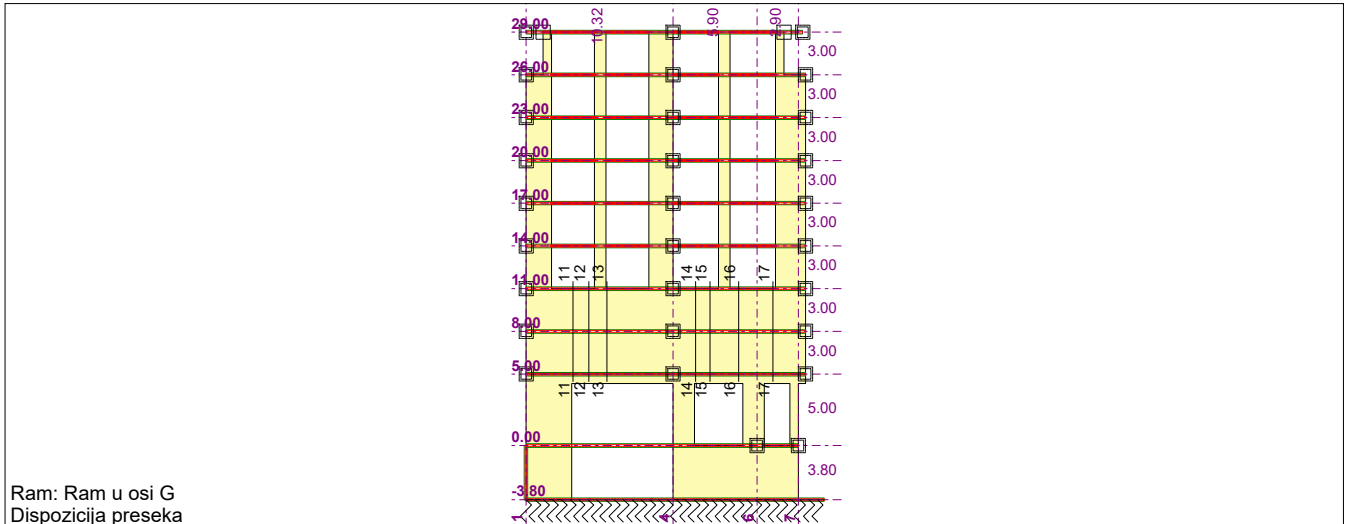
$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 18.00)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 2.66 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$



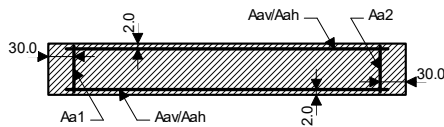




Ram: Ram u osi G  
Dispozicija preseka

**Presek 11 - 11 (X=3.29m)**  
PBAB 87  
MB 40  
Ugaona armatura MA 500/560  
Podužna armatura MA 500/560  
Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje:  
1.60xI+1.80xII  
Merodavna kombinacija za smicanje:  
1.30xI+0.65xII-1.30xIII  
Mu = 415.98 kNm  
Nu = -756.13 kN  
Tu = -3082.16 kN

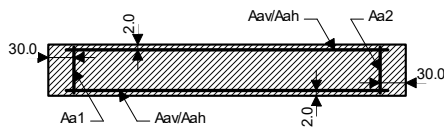


$b/d = 20/600 \text{ cm} \quad Ab = 12000 \text{ cm}^2$

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)  
Aa2 = 0.00 cm<sup>2</sup> (min:18.00)  
Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
Aah = ±5.65 cm<sup>2</sup>/m (min:±2.00)

**Presek 12 - 12 (X=4.40m)**  
PBAB 87  
MB 40  
Ugaona armatura MA 500/560  
Podužna armatura MA 500/560  
Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje:  
1.60xI+1.80xII  
Merodavna kombinacija za smicanje:  
1.30xI+0.65xII-1.30xIII  
Mu = 612.72 kNm  
Nu = -1118.69 kN  
Tu = -3750.26 kN

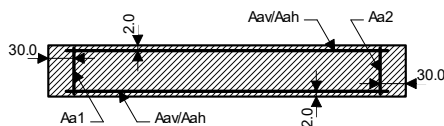


$b/d = 20/600 \text{ cm} \quad Ab = 12000 \text{ cm}^2$

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)  
Aa2 = 0.00 cm<sup>2</sup> (min:18.00)  
Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
Aah = ±6.88 cm<sup>2</sup>/m (min:±2.00)

**Presek 13 - 13 (X=5.68m)**  
PBAB 87  
MB 40  
Ugaona armatura MA 500/560  
Podužna armatura MA 500/560  
Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje:  
1.60xI+1.80xII  
Merodavna kombinacija za smicanje:  
1.30xI+0.65xII-1.30xIII  
Mu = 977.87 kNm  
Nu = -988.91 kN  
Tu = -2121.70 kN

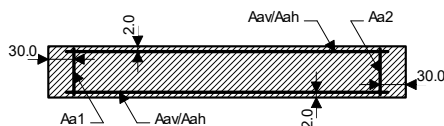


$b/d = 20/600 \text{ cm} \quad Ab = 12000 \text{ cm}^2$

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)  
Aa2 = 0.00 cm<sup>2</sup> (min:18.00)  
Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
Aah = ±3.89 cm<sup>2</sup>/m (min:±2.00)

**Presek 14 - 14 (X=11.89m)**  
PBAB 87  
MB 40  
Ugaona armatura MA 500/560  
Podužna armatura MA 500/560  
Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje:  
1.60xI+1.80xII  
Merodavna kombinacija za smicanje:  
1.30xI+0.65xII+1.30xIII  
Mu = 437.21 kNm  
Nu = -540.53 kN  
Tu = 1612.92 kN



$b/d = 20/600 \text{ cm} \quad Ab = 12000 \text{ cm}^2$

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)  
Aa2 = 0.00 cm<sup>2</sup> (min:18.00)  
Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
Aah = ±2.96 cm<sup>2</sup>/m (min:±2.00)

**Presek 15 - 15 (X=12.92m)**

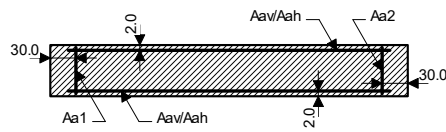
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/600 \text{ cm} \quad A_b = 12000 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

1.60xI+1.80xII

Merodavna kombinacija za smicanje:

1.30xI+0.65xII+1.30xIII

Mu = -487.01 kNm

Nu = -1052.09 kN

Tu = 1079.34 kN

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)Aa2 = 0.00 cm<sup>2</sup> (min:18.00)Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)Aah = ±1.98 cm<sup>2</sup>/m (min:±2.00)**Presek 16 - 16 (X=14.92m)**

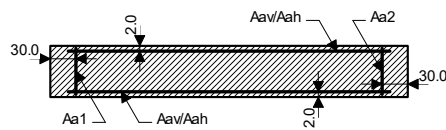
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/600 \text{ cm} \quad A_b = 12000 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

1.60xI+1.80xII

Merodavna kombinacija za smicanje:

1.30xI+0.65xII+1.30xIII

Mu = -270.55 kNm

Nu = -691.08 kN

Tu = 2482.74 kN

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)Aa2 = 0.00 cm<sup>2</sup> (min:18.00)Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)Aah = ±4.55 cm<sup>2</sup>/m (min:±2.00)**Presek 17 - 17 (X=17.33m)**

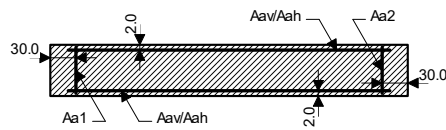
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/600 \text{ cm} \quad A_b = 12000 \text{ cm}^2$$

Merodavna kombinacija za savijanje: 1.60xI+1.80xII

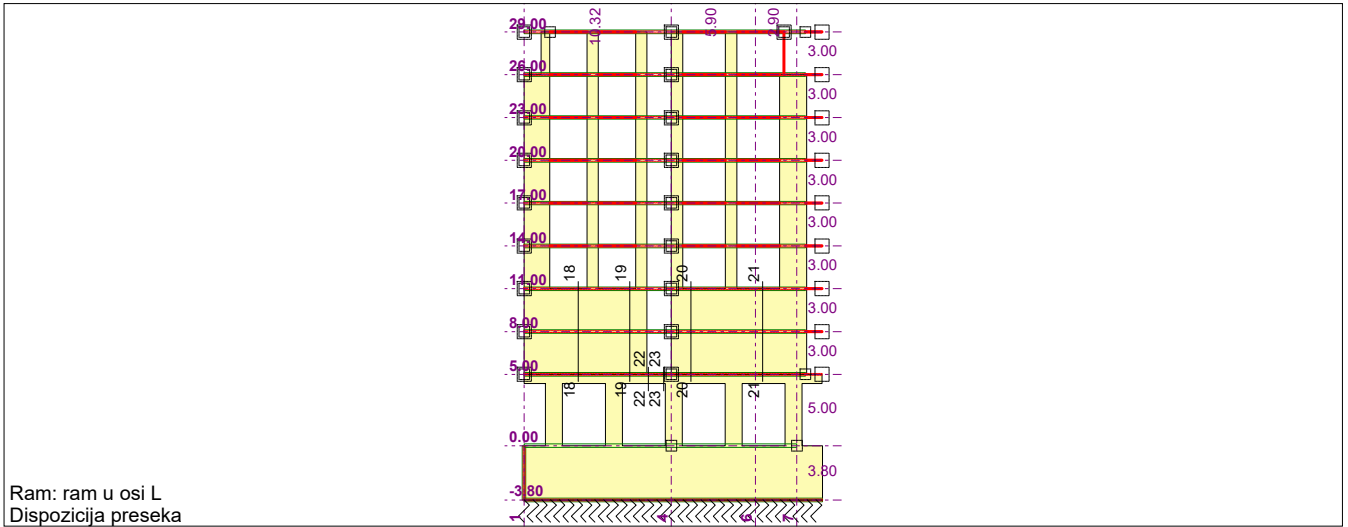
Merodavna kombinacija za smicanje: 1.60xI+1.80xII

Mu = -573.56 kNm

Nu = -681.25 kN

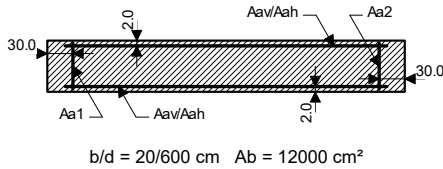
Tu = -1410.44 kN

Aa1 = 0.00 cm<sup>2</sup> (min:18.00)Aa2 = 0.00 cm<sup>2</sup> (min:18.00)Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)Aah = ±2.59 cm<sup>2</sup>/m (min:±2.00)



Presek 18 - 18 (X=3.81m)  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

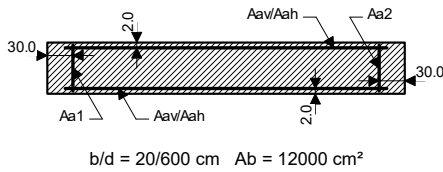
Merodavna kombinacija za savijanje: 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje: 1.30xI+0.65xII-1.30xIII  
 $M_u = -860.48 \text{ kNm}$   
 $N_u = -1059.15 \text{ kN}$   
 $T_u = -1047.56 \text{ kN}$



$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 1.50)$   
 $A_{ah} = \pm 1.92 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 2.00)$

Presek 19 - 19 (X=7.41m)  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

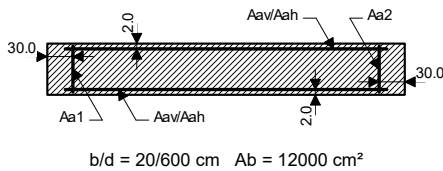
Merodavna kombinacija za savijanje: 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje: 1.60xI+1.80xII  
 $M_u = -18.54 \text{ kNm}$   
 $N_u = -802.02 \text{ kN}$   
 $T_u = -1832.97 \text{ kN}$



$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 1.50)$   
 $A_{ah} = \pm 3.36 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 2.00)$

Presek 20 - 20 (X=11.71m)  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

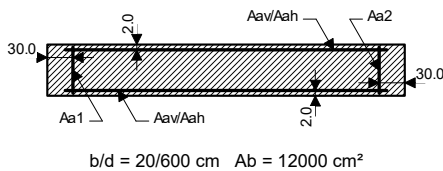
Merodavna kombinacija za savijanje: 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje: 1.30xI+0.65xII+1.30xIII  
 $M_u = -521.16 \text{ kNm}$   
 $N_u = -1366.43 \text{ kN}$   
 $T_u = 991.09 \text{ kN}$



$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 1.50)$   
 $A_{ah} = \pm 1.82 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 2.00)$

Presek 21 - 21 (X=16.72m)  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje: 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje: 1.30xI+0.65xII-1.30xIII  
 $M_u = -856.91 \text{ kNm}$   
 $N_u = -1301.44 \text{ kN}$   
 $T_u = -956.55 \text{ kN}$



$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min}:18.00)$   
 $A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 1.50)$   
 $A_{ah} = \pm 1.75 \text{ cm}^2/\text{m} \quad (\text{min}:\pm 2.00)$

Presek 22 - 22 (X=8.71m)

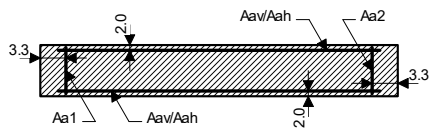
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 30/65 \text{ cm} \quad A_b = 1950 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI + 0.65xII + 1.30xIII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIII$$

$$M_u = 123.10 \text{ kNm}$$

$$N_u = 347.27 \text{ kN}$$

$$T_u = 459.93 \text{ kN}$$

$$\epsilon_b/\epsilon_a = -0.619/10.000 \text{ ‰}$$

$$A_{a1} = 6.34 \text{ cm}^2 \quad (\text{min: } 2.93)$$

$$A_{a2} = 6.34 \text{ cm}^2 \quad (\text{min: } 2.93)$$

$$A_{av} = \pm 2.25 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.25)$$

$$A_{ah} = \pm 7.78 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 3.00)$$

Presek 23 - 23 (X=9.79m)

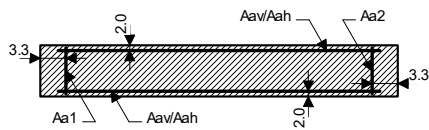
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 30/65 \text{ cm} \quad A_b = 1950 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI + 0.65xII + 1.30xIII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIII$$

$$M_u = -142.89 \text{ kNm}$$

$$N_u = -113.25 \text{ kN}$$

$$T_u = 520.37 \text{ kN}$$

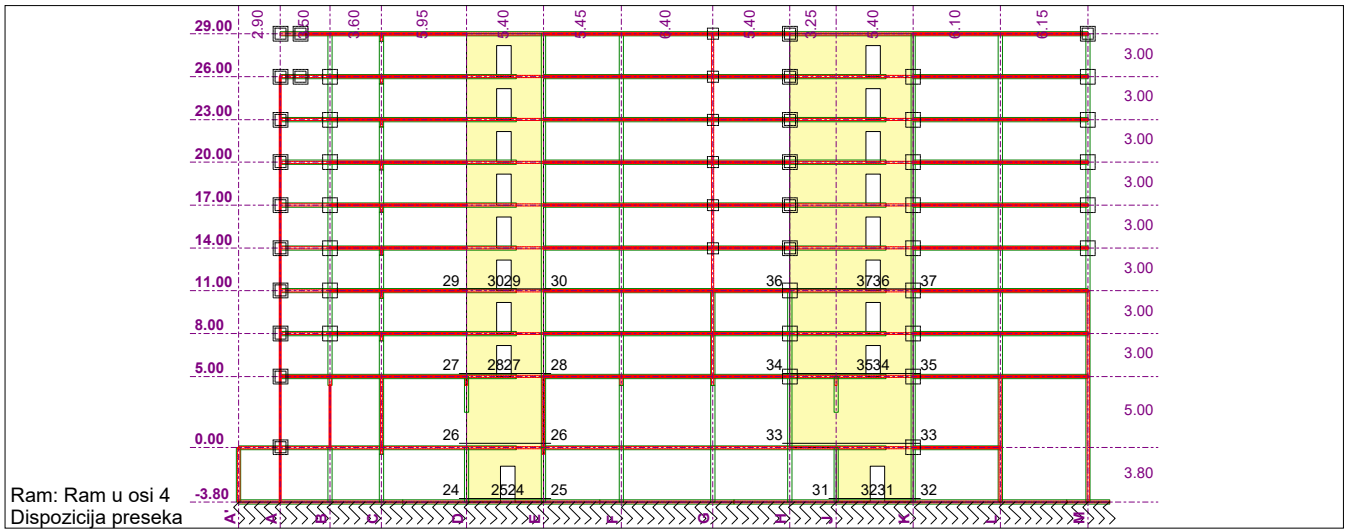
$$\epsilon_b/\epsilon_a = -1.370/10.000 \text{ ‰}$$

$$A_{a1} = 2.44 \text{ cm}^2 \quad (\text{min: } 2.93)$$

$$A_{a2} = 2.44 \text{ cm}^2 \quad (\text{min: } 2.93)$$

$$A_{av} = \pm 2.25 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.25)$$

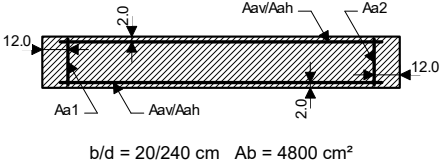
$$A_{ah} = \pm 8.81 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 3.00)$$



Ram: Ram u osi 4  
Dispozicija preseka

**Presek 24 - 24 (Z=-3.57m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

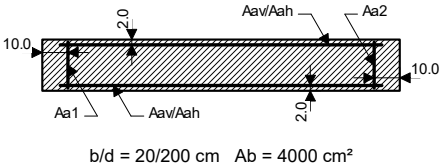
Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII-1.30xIV  
 Mu = -1010.11 kNm  
 Nu = -4685.99 kN  
 Tu = -472.19 kN



Aa1 = 0.00 cm<sup>2</sup> (min:7.20)  
 Aa2 = 0.00 cm<sup>2</sup> (min:7.20)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±2.16 cm<sup>2</sup>/m (min:±2.00)

**Presek 25 - 25 (Z=-3.57m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

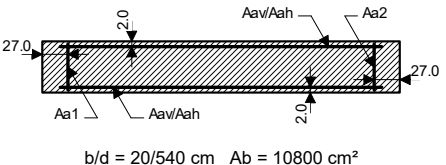
Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII-1.30xIV  
 Mu = 1051.41 kNm  
 Nu = -4074.59 kN  
 Tu = -530.18 kN



Aa1 = 0.00 cm<sup>2</sup> (min:6.00)  
 Aa2 = 0.00 cm<sup>2</sup> (min:6.00)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±2.92 cm<sup>2</sup>/m (min:±2.00)

**Presek 26 - 26 (Z=0.30m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

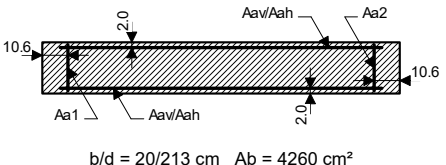
Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII+1.30xIV  
 Mu = -903.03 kNm  
 Nu = -5801.57 kN  
 Tu = 731.12 kN



Aa1 = 0.00 cm<sup>2</sup> (min:16.20)  
 Aa2 = 0.00 cm<sup>2</sup> (min:16.20)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±1.49 cm<sup>2</sup>/m (min:±2.00)

**Presek 27 - 27 (Z=5.19m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII+1.30xIV  
 Mu = 150.33 kNm  
 Nu = -2262.13 kN  
 Tu = 263.40 kN



Aa1 = 0.00 cm<sup>2</sup> (min:6.39)  
 Aa2 = 0.00 cm<sup>2</sup> (min:6.39)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±1.36 cm<sup>2</sup>/m (min:±2.00)

**Presek 28 - 28 (Z=5.19m)**

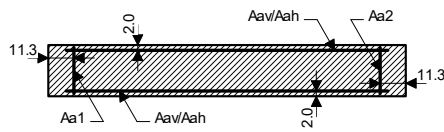
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/226 \text{ cm} \quad A_b = 4520 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII+1.30xIV$$

$$M_u = -77.00 \text{ kNm}$$

$$N_u = -2068.75 \text{ kN}$$

$$T_u = 393.83 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.78)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.78)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 1.92 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 29 - 29 (Z=11.14m)**

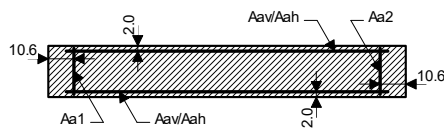
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/213 \text{ cm} \quad A_b = 4260 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII-1.30xIV$$

$$M_u = 156.23 \text{ kNm}$$

$$N_u = -1717.18 \text{ kN}$$

$$T_u = -184.72 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.39)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.39)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 0.95 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 30 - 30 (Z=11.14m)**

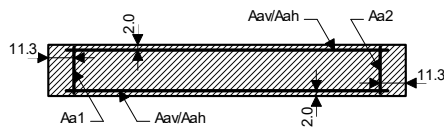
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/226 \text{ cm} \quad A_b = 4520 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII-1.30xIV$$

$$M_u = 37.35 \text{ kNm}$$

$$N_u = -1564.28 \text{ kN}$$

$$T_u = -298.07 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.78)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.78)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 1.45 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 31 - 31 (Z=-3.57m)**

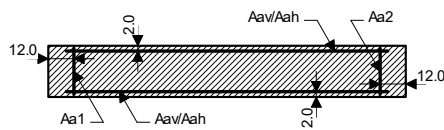
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/240 \text{ cm} \quad A_b = 4800 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII+1.30xIV$$

$$M_u = -800.39 \text{ kNm}$$

$$N_u = -4370.49 \text{ kN}$$

$$T_u = 425.16 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}7.20)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}7.20)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 1.95 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 32 - 32 (Z=-3.57m)**

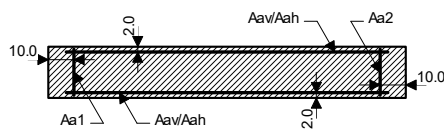
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/200 \text{ cm} \quad A_b = 4000 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII-1.30xIV$$

$$M_u = 897.33 \text{ kNm}$$

$$N_u = -4284.25 \text{ kN}$$

$$T_u = -292.97 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.00)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.00)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 1.61 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 33 - 33 (Z=0.30m)**

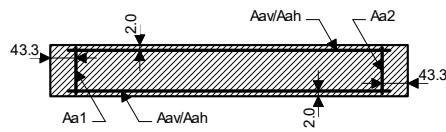
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/865 \text{ cm} \quad A_b = 17300 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII - 1.30xIV$$

$$M_u = 7638.51 \text{ kNm}$$

$$N_u = -6195.99 \text{ kN}$$

$$T_u = -2245.87 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 25.95)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 25.95)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 2.86 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 34 - 34 (Z=5.19m)**

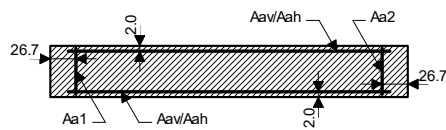
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/533 \text{ cm} \quad A_b = 10660 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = 1013.84 \text{ kNm}$$

$$N_u = -4525.86 \text{ kN}$$

$$T_u = 1791.64 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 15.99)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 15.99)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 3.70 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 35 - 35 (Z=5.19m)**

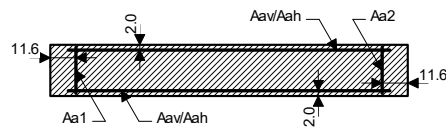
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/231 \text{ cm} \quad A_b = 4620 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII - 1.30xIV$$

$$M_u = -120.09 \text{ kNm}$$

$$N_u = -2183.02 \text{ kN}$$

$$T_u = -551.72 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.93)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.93)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 2.63 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 36 - 36 (Z=11.14m)**

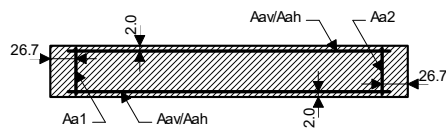
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/533 \text{ cm} \quad A_b = 10660 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI + 0.65xII + 1.30xIV$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = -5100.96 \text{ kNm}$$

$$N_u = -1772.22 \text{ kN}$$

$$T_u = 1511.50 \text{ kN}$$

$$\epsilon_b/\epsilon_a = -1.581/10.000 \%$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 15.99)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 15.99)$$

$$A_{av} = \pm 0.75 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 3.12 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 37 - 37 (Z=11.14m)**

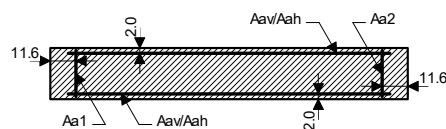
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/231 \text{ cm} \quad A_b = 4620 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII - 1.30xIV$$

$$M_u = -66.05 \text{ kNm}$$

$$N_u = -1659.34 \text{ kN}$$

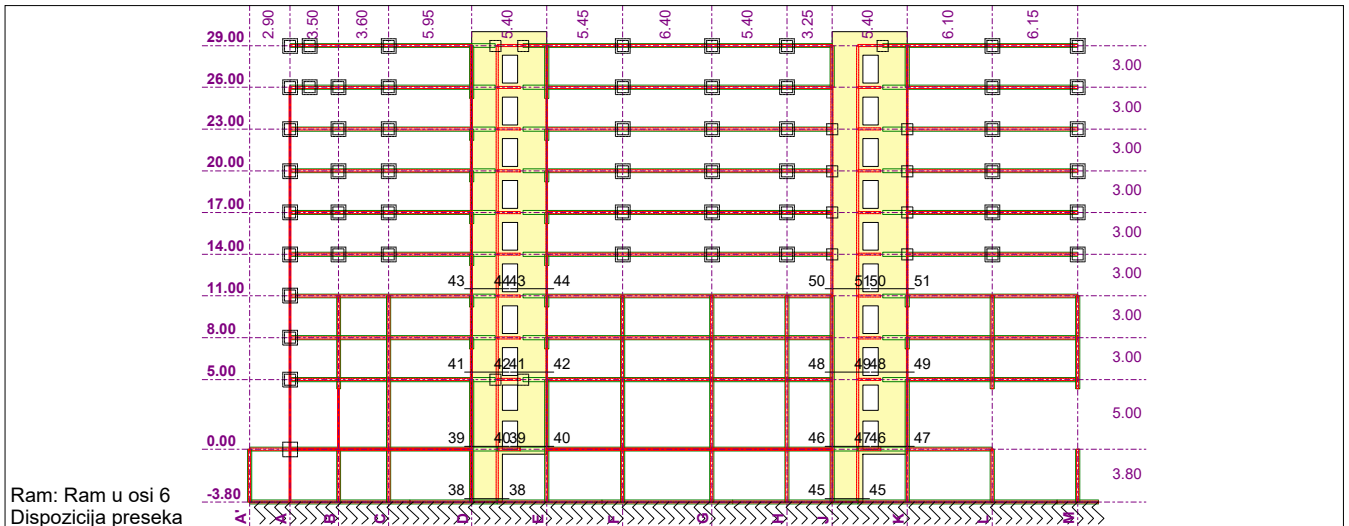
$$T_u = -498.57 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.93)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.93)$$

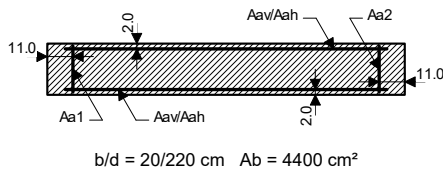
$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 2.37 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$



**Presek 38 - 38 (Z=-3.56m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

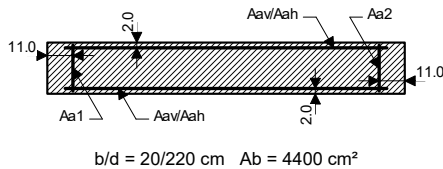
Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII+1.30xIV  
 Mu = -467.78 kNm  
 Nu = -1137.45 kN  
 Tu = -564.48 kN



Aa1 = 0.00 cm<sup>2</sup> (min:6.60)  
 Aa2 = 0.00 cm<sup>2</sup> (min:6.60)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±2.82 cm<sup>2</sup>/m (min:±2.00)

**Presek 39 - 39 (Z=0.18m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

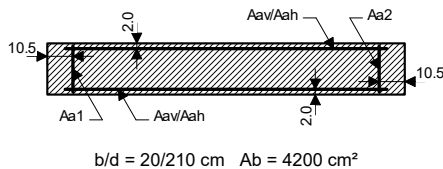
Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII+1.30xIV  
 Mu = 273.92 kNm  
 Nu = -1824.80 kN  
 Tu = 446.22 kN



Aa1 = 0.00 cm<sup>2</sup> (min:6.60)  
 Aa2 = 0.00 cm<sup>2</sup> (min:6.60)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±2.23 cm<sup>2</sup>/m (min:±2.00)

**Presek 40 - 40 (Z=0.18m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

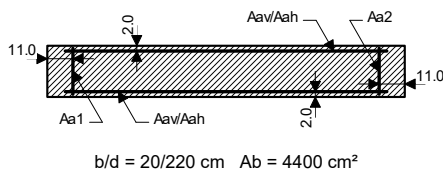
Merodavna kombinacija za savijanje:  
 1.30xI+0.65xII+1.30xIV  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII+1.30xIV  
 Mu = -558.37 kNm  
 Nu = -347.45 kN  
 Tu = -414.20 kN



εb/εa = -1.224/10.000 ‰  
 Aa1 = 0.00 cm<sup>2</sup> (min:6.30)  
 Aa2 = 0.00 cm<sup>2</sup> (min:6.30)  
 Aav = ±1.25 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±2.17 cm<sup>2</sup>/m (min:±2.00)

**Presek 41 - 41 (Z=5.53m)**  
 PBAB 87  
 MB 40  
 Ugaona armatura MA 500/560  
 Podužna armatura MA 500/560  
 Dimenzionisanje grupe slučajeva opterećenja: 6-10

Merodavna kombinacija za savijanje:  
 1.60xI+1.80xII  
 Merodavna kombinacija za smicanje:  
 1.30xI+0.65xII+1.30xIV  
 Mu = 70.62 kNm  
 Nu = -1549.12 kN  
 Tu = 424.84 kN



Aa1 = 0.00 cm<sup>2</sup> (min:6.60)  
 Aa2 = 0.00 cm<sup>2</sup> (min:6.60)  
 Aav = ±0.00 cm<sup>2</sup>/m (min:±1.50)  
 Aah = ±2.12 cm<sup>2</sup>/m (min:±2.00)



**Presek 42 - 42 (Z=5.53m)**

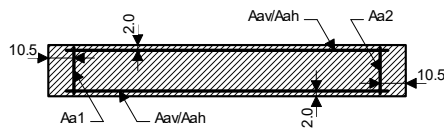
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/210 \text{ cm} \quad A_b = 4200 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = 22.82 \text{ kNm}$$

$$N_u = -1586.14 \text{ kN}$$

$$T_u = 470.50 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.30)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.30)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 2.46 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 43 - 43 (Z=11.53m)**

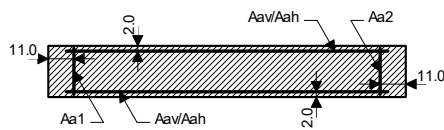
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = 38.09 \text{ kNm}$$

$$N_u = -1170.03 \text{ kN}$$

$$T_u = 457.82 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.60)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.60)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 2.29 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 44 - 44 (Z=11.53m)**

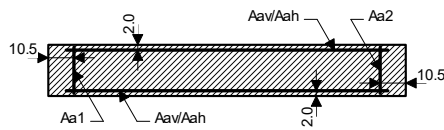
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/210 \text{ cm} \quad A_b = 4200 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = 54.18 \text{ kNm}$$

$$N_u = -1276.61 \text{ kN}$$

$$T_u = 580.45 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.30)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.30)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 3.04 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 45 - 45 (Z=-3.56m)**

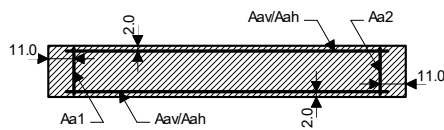
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = -461.07 \text{ kNm}$$

$$N_u = -1265.25 \text{ kN}$$

$$T_u = -219.82 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.60)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.60)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 1.10 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 46 - 46 (Z=0.18m)**

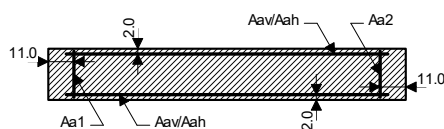
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI + 1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI + 0.65xII + 1.30xIV$$

$$M_u = 97.36 \text{ kNm}$$

$$N_u = -1635.94 \text{ kN}$$

$$T_u = 258.99 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.60)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min: } 6.60)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 1.50)$$

$$A_{ah} = \pm 1.29 \text{ cm}^2/\text{m} \quad (\text{min: } \pm 2.00)$$

**Presek 47 - 47 (Z=0.18m)**

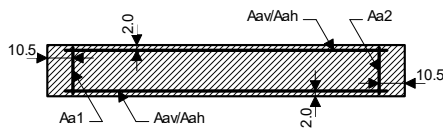
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/210 \text{ cm} \quad A_b = 4200 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI+0.65xII+1.30xIV$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII-1.30xIV$$

$$M_u = -607.83 \text{ kNm}$$

$$N_u = -186.77 \text{ kN}$$

$$T_u = -523.66 \text{ kN}$$

$$\epsilon_b/\epsilon_a = -1.145/10.000 \text{ ‰}$$

$$A_{a1} = 1.67 \text{ cm}^2 \quad (\text{min:}6.30)$$

$$A_{a2} = 1.67 \text{ cm}^2 \quad (\text{min:}6.30)$$

$$A_{av} = \pm 1.50 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 2.74 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 48 - 48 (Z=5.53m)**

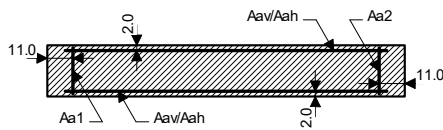
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII+1.30xIV$$

$$M_u = -32.69 \text{ kNm}$$

$$N_u = -1367.34 \text{ kN}$$

$$T_u = 406.48 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.60)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.60)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 2.03 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 49 - 49 (Z=5.53m)**

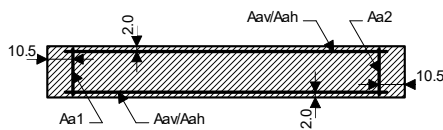
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/210 \text{ cm} \quad A_b = 4200 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.60xI+1.80xII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII+1.30xIV$$

$$M_u = 108.72 \text{ kNm}$$

$$N_u = -1806.60 \text{ kN}$$

$$T_u = 375.48 \text{ kN}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.30)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.30)$$

$$A_{av} = \pm 0.00 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 1.97 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 50 - 50 (Z=11.53m)**

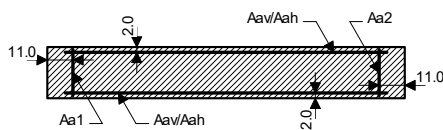
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/220 \text{ cm} \quad A_b = 4400 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI+0.65xII+1.30xIII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII+1.30xIV$$

$$M_u = 320.17 \text{ kNm}$$

$$N_u = -68.91 \text{ kN}$$

$$T_u = 424.47 \text{ kN}$$

$$\epsilon_b/\epsilon_a = -0.809/10.000 \text{ ‰}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.60)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.60)$$

$$A_{av} = \pm 1.24 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 2.12 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$

**Presek 51 - 51 (Z=11.53m)**

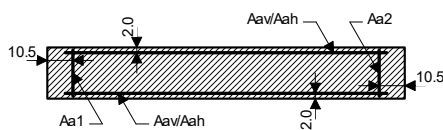
PBAB 87

MB 40

Ugaona armatura MA 500/560

Podužna armatura MA 500/560

Dimenzionisanje grupe slučajeva opterećenja: 6-10



$$b/d = 20/210 \text{ cm} \quad A_b = 4200 \text{ cm}^2$$

Merodavna kombinacija za savijanje:

$$1.30xI+0.65xII+1.30xIII$$

Merodavna kombinacija za smicanje:

$$1.30xI+0.65xII+1.30xIV$$

$$M_u = 200.57 \text{ kNm}$$

$$N_u = -184.61 \text{ kN}$$

$$T_u = 417.33 \text{ kN}$$

$$\epsilon_b/\epsilon_a = -0.685/10.000 \text{ ‰}$$

$$A_{a1} = 0.00 \text{ cm}^2 \quad (\text{min:}6.30)$$

$$A_{a2} = 0.00 \text{ cm}^2 \quad (\text{min:}6.30)$$

$$A_{av} = \pm 0.08 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 1.50)$$

$$A_{ah} = \pm 2.19 \text{ cm}^2/\text{m} \quad (\text{min:}\pm 2.00)$$