

## Minimum lengdearmring EC2 9.2.1.1

$$\begin{aligned} A_{sx,min} &= 0.26 \cdot \frac{f_{ctm}}{f_{yk}} \cdot b_t \cdot d_x \\ &= 0.26 \cdot \frac{3.2}{500} \cdot 10^3 \cdot 249 \text{ mm}^2 \\ &= \underline{414 \text{ mm}^2/\text{m}} \end{aligned} \quad \begin{aligned} d_x &= h - c_{nom} - \phi/2 \\ &= 280 - 25 - 12/2 \\ &= 249 \text{ mm} \end{aligned}$$

$$\begin{aligned} A_{sy,min} &= 0.26 \cdot \frac{3.2}{500} \cdot 10^3 \cdot 237 \text{ mm}^2 \\ &= \underline{394 \text{ mm}^2/\text{m}} \end{aligned} \quad \begin{aligned} d_y &= h - c_{nom} - \phi - \phi/2 \\ &= 280 - 25 - 12 - 12/2 \\ &= 237 \text{ mm} \end{aligned}$$

## Momentkapasitet flatdekket:

$$\begin{aligned} M_{ed,x} &= 0.275 \cdot f_{cd} \cdot b \cdot d_x^2 \\ &= 0.275 \cdot 19.8 \cdot 10^3 \cdot 249^2 \cdot 10^{-6} \text{ kNm/m} \\ &= \underline{337.6 \text{ kNm/m}} \end{aligned}$$

$$\begin{aligned} M_{ed,y} &= 0.275 \cdot 19.8 \cdot 10^3 \cdot 237^2 \cdot 10^{-6} \text{ kNm/m} \\ &= \underline{305.8 \text{ kNm/m}} \end{aligned}$$

## Største momenter fra Robot:

$$\begin{aligned} m_{xs} &= 61.1 \text{ kNm/m} & m_{xf} &= 38.6 \text{ kNm/m} \\ m_{ys} &= 48.9 \text{ kNm/m} & m_{yf} &= 38.7 \text{ kNm/m} \end{aligned}$$

## Armering i x-retning:

• Indre søylestribe:  $2.0 m_{xs} = 122.2 \text{ kNm/m}$

$$\begin{aligned} z &= \left(1 - 0.17 \cdot \frac{M_{ed}}{M_{ed}}\right) \cdot d = \left(1 - 0.17 \cdot \frac{122.2}{337.6}\right) \cdot 249 \text{ mm} \\ &= 234 \text{ mm} \end{aligned}$$

$$A_{sx,is} = \frac{M_{ed}}{z \cdot f_{yd}} = \frac{122.2 \cdot 10^6}{234 \cdot 434} = 1203 \text{ mm}^2/\text{m}$$

∴ velger  $A_{sx,is} = \phi 12 \text{ s } 90 = \underline{1257 \text{ mm}^2/\text{m}}$



• Ytre søylestripe:  $1.0 \text{ m} \times s = 61.1 \text{ kNm/m}$

$$z = (1 - 0.17 \cdot \frac{61.1}{337.6}) \cdot 249 \text{ mm}$$

$$= 241 \text{ mm} > 0.95d$$

$$\Rightarrow z = 0.95d = 237 \text{ mm}$$

$$A_{sx,ys} = \frac{61.1 \cdot 10^6}{237 \cdot 434} = 594 \text{ mm}^2/\text{m}$$

) : velger  $A_{sx,ys} = \phi 12 s 190 = 595 \text{ mm}^2/\text{m}$

• Midtstripe:  $0.5 \text{ m} \times s = 30.6 \text{ kNm/m}$

$$z = 0.95d = 237 \text{ mm}$$

$$A_{sx,ms} = \frac{1}{2} \cdot A_{sx,ys} = 297 \text{ mm}^2/\text{m} < A_{s,min}$$

) : velger  $A_{sx,ms} = \phi 12 s 270 = 419 \text{ mm}^2/\text{m}$

• Søylestripe:  $1.2 \text{ m} \times f = 46.3 \text{ kNm/m}$

$$z = 0.95d = 237 \text{ mm}$$

$$A_{sx,s} = \frac{46.3 \cdot 10^6}{237 \cdot 434} = 450 \text{ mm}^2/\text{m}$$

) : velger  $A_{sx,s} = \phi 12 s 250 = 452 \text{ mm}^2/\text{m}$

• Midtstripe:  $0.8 \text{ m} \times f = 30.9 \text{ kNm/m}$

$$z = 0.95d = 237 \text{ mm}$$

$$A_{sx,m} = \frac{30.9 \cdot 10^6}{237 \cdot 434} = 300 \text{ mm}^2/\text{m} < A_{s,min}$$

) : velger  $A_{sx,m} = \phi 12 s 270 = 419 \text{ mm}^2/\text{m}$



## Armering i y-retning:

• Indre spylestribe:  $2,0 m_{ys} = 97,8 \text{ kNm/m}$

$$z = (1 - 0,17 \cdot \frac{97,8}{305,8}) \cdot 237 \text{ mm} \\ = 224 \text{ mm}$$

$$A_{sy, is} = \frac{97,8 \cdot 10^6}{224 \cdot 434} = 1006 \text{ mm}^2/\text{m}$$

∴ velger  $A_{sy, is} = \phi 12 s 110 = 1028 \text{ mm}^2/\text{m}$

• Ytre spylestribe:  $1,0 m_{ys} = 48,9 \text{ kNm/m}$

$$z = 0,95 d = 225 \text{ mm}$$

$$A_{sy, ys} = \frac{48,9 \cdot 10^6}{225 \cdot 434} = 501 \text{ mm}^2/\text{m}$$

∴ velger  $A_{sy, ys} = \phi 12 s 220 = 514 \text{ mm}^2/\text{m}$

• Midt stripe:  $0,5 m_{ys} = 24,5 \text{ kNm/m}$

$$z = 0,95 d = 225 \text{ mm}$$

$$A_{sy, ms} = \frac{24,5 \cdot 10^6}{225 \cdot 434} = 251 \text{ mm}^2/\text{m} < A_{sy, min}$$

∴ velger  $A_{sy, ms} = \phi 12 s 280 = 404 \text{ mm}^2/\text{m}$

• Spylestribe:  $1,2 m_{yt} = 416,5 \text{ kNm/m}$

$$z = 0,95 d = 224 \text{ mm}$$

$$A_{sy, s} = \frac{416,5 \cdot 10^6}{224 \cdot 434} = 476 \text{ mm}^2/\text{m}$$

∴ velger  $A_{sy, s} = \phi 12 s 230 = 492 \text{ mm}^2/\text{m}$

• Midt stripe:  $0,8 m_{yt} = 31,0 \text{ kNm/m}$

$$z = 0,95 d = 224 \text{ mm}$$

$$A_{sy, m} = \frac{31,0 \cdot 10^6}{224 \cdot 434} = 317 \text{ mm}^2/\text{m} < A_{sy, min}$$

∴ velger  $A_{sy, m} = \phi 12 s 280 = 404 \text{ mm}^2/\text{m}$