Minimum reinforcement for walls

Vertical reinforcement:

Steel area = minimum 0,40% of the concrete cross section area equally divided to each side of the wall.

Distance = minimum value \( \frac{300 \text{ mm}}{2 \cdot \text{wall thickness}} \)

Horizontal reinforcement:

Steel area = minimum 0,20% - 0,40% of the concrete cross section area.

Distance = 300 mm maximum.

Diameter = minimum \( \frac{1}{4} \) of diameter of the vertical reinforcement.

Example:

Vertical reinforcement:

Minimum steel area: \( A_{\text{min}} = 0,40 \cdot 200 \text{mm} \cdot 1000 \text{mm}/100 = 800 \text{mm}^2/\text{m} \)

If Ø12mm main reinforcement is chosen then:

Number of steel bars needed: \( N = 800 \text{mm}^2/113 \text{mm}^2 = 7,1 \rightarrow 8 \)

Since there is placed the same quantity of reinforcement in both sides an even number of steel bars are chosen.

8 Ø12mm Y-Steel bars are used, where \( A = 904 \text{mm}^2/\text{m} \) (4 in each side)

Actual reinforcement percentage = \( 904 \text{mm}^2 \cdot 100/200 \text{mm} \cdot 1000 \text{mm} = 0,45 \)

Horizontal reinforcement:

10 Ø8mm Y-Steel bars are used, where \( A = 500 \text{mm}^2/\text{m} \) (5 in each side)

Actual reinforcement percentage = \( 500 \text{mm}^2 \cdot 100/200 \text{mm} \cdot 1000 \text{mm} = 0,25 \)