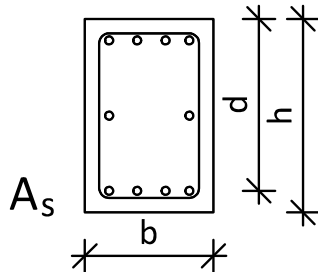


Berekening hoofdwapening betondoorsnede NEN-EN 1992-1-1 artikel 6.1

Geometrie



Hoogte h =	600 mm
Breedte b =	400 mm
Diameterhoofdwapening d_{hoofd} =	16 mm
Dekking c_{nom} =	30 mm
Diameterbeugels $d_{beugels}$ =	8 mm

Materialen

Beton	=	C28/35
f_{ck}	=	28 N/mm ²
f_{ctm}	=	2,80 N/mm ²
$f_{cd} = f_{ck} / 1,5$	=	19 N/mm ²

Belastingen

M_{Ed} =	214 kNm
δ =	1,0
Geen herverdeling.	

Bepaling hoofdwapening

$$d = h - c_{nom} - d_{beugels} - 0,5 * d_{hoofd} = 554 \text{ mm}$$

$$K = \frac{M_{Ed} * 10^6}{b * d^2 * f_{cd}} = 0,092$$

$$z = \frac{d}{2} * (1 + \sqrt{1 - 112 * K / 54}) = 526 \text{ mm}$$

$$x_U = \frac{18}{7} * (d - z) = 72 \text{ mm}$$

$$A_s = \frac{M_{Ed} * 10^6}{435 * z} = 935 \text{ mm}^2$$

Toegepaste wapening

Wapening	=	6 \varnothing 16
$A_{s,toe}$	=	1206 > A_s

Controle minimumwapening

$$A_{s,min1} = \frac{0,26 * f_{ctm} * b * d}{500} = 323 \text{ mm}^2$$

$$A_{s,min2} = 0,0013 * b * d = 288 \text{ mm}^2$$

$$A_{s,min} = \text{MAX}(A_{s,min1}; A_{s,min2}) = 323 \text{ mm}^2 < A_s$$

Controle hoogte van betondrukzone volgens artikel 5.5

Geen herverdeling: $\delta = 1,00$

$$k_1 = 0,44$$

$$k_2 = 1,25 * \left(0,6 + \frac{0,0014}{0,0035} \right) = 1,25$$

$$k_1 + k_2 * \frac{x_u}{d} = 0,44 + 1,25 * \frac{72}{554} = 0,60 \leq \delta$$