ORTHOTROPE PARAMETERS

afmetingen doorsnede beton B22,5 = C20/25

$b := 1000mm \quad h := 480mm$

$A_c := h \cdot b = 4.8 \times 10^5 \cdot mm^2$

$E_1 := 31500MPa$

$E_2 := \frac{E_1}{3} = 10500 \cdot MPa$

$\nu_{12} := 0.2$

Berekening

$\nu_{21} := \nu_{12} \cdot \frac{E_2}{E_1}$ $\quad \nu_{21} = 0.067$

$D_{11} := \frac{E_1 \cdot h^3}{12 \cdot (1 - \nu_{12} \cdot \nu_{21})}$ $\quad D_{11} = 294.227 \cdot MN \cdot m$

$D_{22} := \frac{E_2 \cdot h^3}{12 \cdot (1 - \nu_{12} \cdot \nu_{21})}$ $\quad D_{22} = 98.076 \cdot MN \cdot m$

$D_{12} := \nu_{21} \cdot D_{11}$ $\quad D_{12} = 19.615 \cdot MN \cdot m$

$D_{33} := \frac{\sqrt{E_1 \cdot E_2}}{2 \cdot (1 + \sqrt{\nu_{12} \cdot \nu_{21}})} \cdot \frac{h^3}{12}$ $\quad D_{33} = 75.128 \cdot MN \cdot m$

$D_{44} := \frac{E_2 \cdot h}{1.2 \cdot 2 \cdot (1 + \nu_{21})}$ $\quad D_{44} = 1969 \cdot \frac{MN}{m}$

$D_{55} := \frac{E_1 \cdot h}{1.2 \cdot 2 \cdot (1 + \nu_{12})}$ $\quad D_{55} = 5250 \cdot \frac{MN}{m}$

$$d_{11} := \frac{E_1 \cdot h}{1 - \nu_{12} \cdot \nu_{21}} \qquad d_{11} = 15324 \cdot \frac{MN}{m}$$

$$d_{22} := \frac{E_2 \cdot h}{1 - \nu_{12} \cdot \nu_{21}} \qquad d_{22} = 5108 \cdot \frac{MN}{m}$$

$$d_{33} := \frac{\sqrt{E_1 \cdot E_2} \cdot h}{2 \cdot \left(1 + \sqrt{\nu_{12} \cdot \nu_{21}}\right)} \qquad d_{33} = 3913 \cdot \frac{MN}{m}$$

$$d_{12} := \nu_{21} \cdot d_{11} \qquad d_{12} = 1021.62 \cdot \frac{MN}{m}$$