Diseño de losa maciza

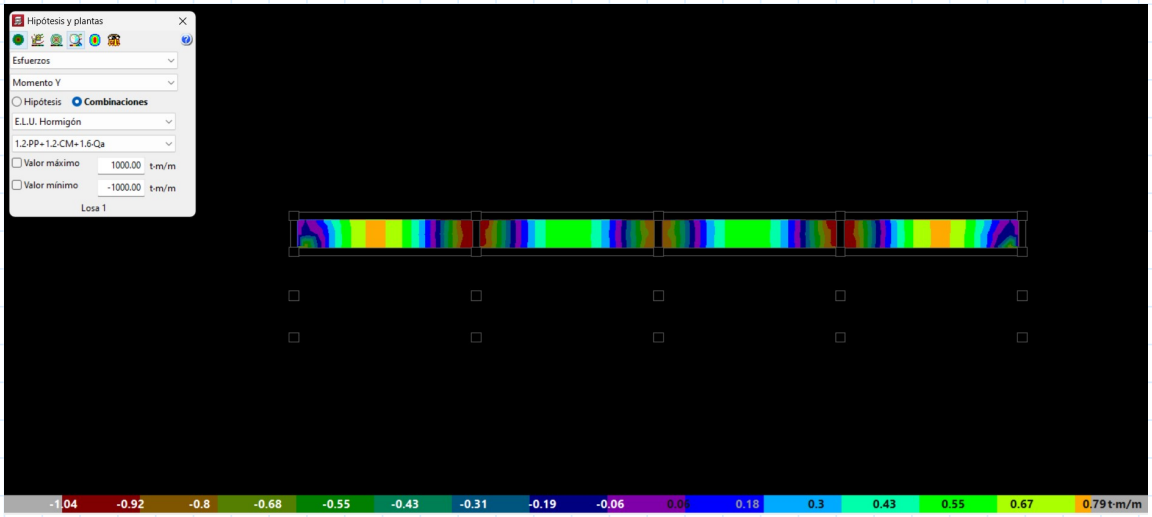
$fc := 21\ MPa$ $fy := 420\ MPa$

$h := 15\ cm$ Espesor de la torta

$L := 0.55\ m$ Distancia en voladizo

$\lambda := 1.00$ Concreto de peso normal

CARGAS



Momento Ultimo

$Mult := 0.79\ tonf \cdot m = 7.028\ kN \cdot m$

$m1 := \frac{fy}{0.85 \cdot fc} = 23.529$ $d := h - 0.04\ m = 0.11\ m$

$b := 1\ m$ $K := \frac{Mult}{b \cdot d^2} = 580.842\ \frac{kN}{m^2}$

$\rho := \frac{1}{m1}\left(1 - \sqrt[2]{1 - \frac{2 \cdot m1 \cdot K}{0.9 \cdot fy}}\right) = 0.002$

$\rho min := 0.002$

$\rho := \text{if}\left(\rho < \rho min, \rho min, \rho\right) = 0.002$

$As := \rho \cdot d \cdot b = 2.2\ cm^2$

$Astemp := \rho min \cdot h \cdot b = 3\ cm^2$ Por ml

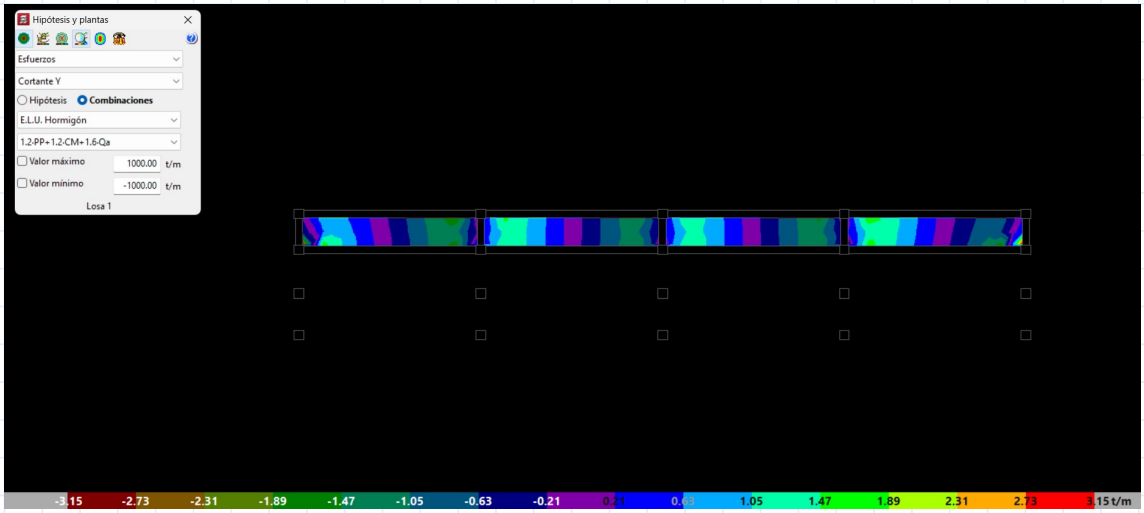
$Asdis := \text{if}(As < Astemp, Astemp, As) = 3\ cm^2$

El acero colocado #3 @ 12.5

$Acol := \frac{100}{12.5} \cdot 71\ mm^2 = 5.68\ cm^2$

$\text{if}(Asdis < Acol, \text{“Cumple”}, \text{“No cumple”}) = \text{“Cumple”}$

Chequeo a cortante



$Vult := 3.15\ tonf = 28.024\ kN$

Esfuerzo

$vd := \frac{Vult}{(b \cdot 100\ m)} = 280.238\ Pa$

Esfuerzo de cortante del concreto

$\Phi := 0.75$

$\phi Vc := \Phi \cdot \lambda \cdot \frac{\sqrt{\frac{fc}{MPa}} \cdot kN}{d \cdot b} = 31.245\ \frac{kN}{m^2}$

$\text{if}(vd < \phi Vc, \text{“Cumple”}, \text{“No cumple”}) = \text{“Cumple”}$