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Nombre del profesor: Pedro Alberto García

Nombre del trabajo: Cálculo del acero de refuerzo de una viga rectangular

Materia: Análisis de estructuras

Grado: 5to

Grupo: "A"

Comitán de Domínguez Chiapas a 11 de Febrero de 2022.

"constantes" concreto $f'c = 200\ kg/cm^2$ Acero $FY = 4,200\ kg/cm^2$

$f''c = 0.8\ f'c \rightarrow (0.8)(200\ kg/cm^2) = 160\ kg/cm^2$ #

$f_c = 0.85\ f''c \rightarrow (0.85)(160\ kg/cm^2) = 136\ kg/cm^2$ #

$b = \frac{f''c}{fy} = \frac{4800}{fy+6000} \rightarrow \frac{136\ kg/cm^2}{4200\ kg/cm^2} + \frac{4800}{4200+6000\ kg/cm^2} = 0.0323 + 0.0152$ $b = 0.01524$ #

$min = \frac{0.7\sqrt{f'c}}{FY} \rightarrow \frac{0.7\sqrt{200\ kg/cm^2}}{4200\ kg/cm^2} = 0.002357$ #

$max = 0.75(b) = 0.75(0.01524) = 0.01193$ #

$f''c = 160\ kg/cm^2$ $FR = 0.9$

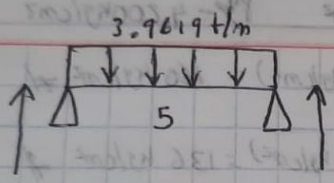
$f''c = 136\ kg/cm^2$

$b = 0.01524$

$min = 0.002357$

$max = 0.01193$

F.S (sismo) $\rightarrow 1.3$



Datos

$b = 15\ cm$

$h = 45\ cm$

$d = 41\ cm$

$MU = 1,609,517\ kg\cdot cm$

$FY = 4,200\ kg/cm^2$

$f'c = 200\ kg/cm^2$

$M = \frac{wL^2}{8} = (3.9619)(5)^2/8 = 12.3809\ t/m \times 100,000 = 1,238,090\ kg\cdot cm$

$MU = 1,238,090\ kg\cdot cm\ (1.3) = 1,609,517\ kg\cdot cm$

$MU = 1,609,517\ kg\cdot cm$ #

$q = \frac{\sqrt{1,609,517\ kg\cdot cm \times 2 + 1}}{\sqrt{0.90 \times 15 \times 56^2 \times 136}} \quad \sqrt{1,609,517\ kg\cdot cm \times 2 + 1}$

$\sqrt{5,757,696}$

$q = \sqrt{0.5590 + 1}$ $q = \sqrt{(-0.5590) + (1)} = \sqrt{0.441} = 0.6640$

$\rho = \frac{((-0.6640 + 1)\ 136\ kg/cm^2)}{4200\ kg/cm^2} = 0.01088$ # SI PASA

0.6640