TRAMETOOLS

Axial and Flexural Interaction Diagram

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Axial and Flexural Interaction Diagram for Rectangular RC cross-section

1 Bending Moment and Axial Force Demand

$M_d = 5000 \quad kN.cm$ moment .

$N_d = -100 \quad kN$ axial load .

2 Rectangular Section

$bw = 20 \quad cm$ width .

$h = 30 \quad cm$ height .

3 Materials

$f_{ck} = 30 \quad MPa$ concrete compressive strength .

$f_{yk} = 500 \quad MPa$ bar yield strength .

$E_s = 210000 \quad MPa$ modulus of elasticity of steel .

*https://trametools.com

4 Mild Reinforced Bars

Coordinate y1 : 3cm — 3Ø16mm – Area: 6.0319 cm^2

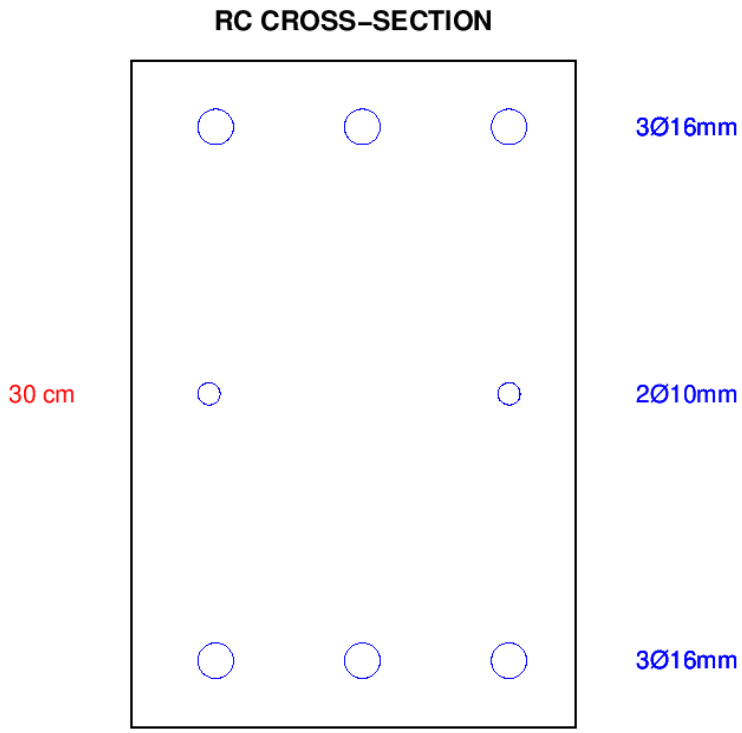
Coordinate y2 : 15cm — 2Ø10mm – Area: 1.5708 cm^2

Coordinate y3 : 27cm — 3Ø16mm – Area: 6.0319 cm^2

5 Domains of Deformation Results

Domain	Mrd (kN.cm)	Nrd (kN)
line b	0	-1640.7321
4a	4756.1122	-1231.7251
3-4	9984.7424	-501.6189
2-3	9477.9278	-118.2607
1-2	1458.4122	471.3352
line a	0	592.8696

6 RC Cross-Section



$A_g = 600 \quad cm^2$ gross area .

$A_s = 13.636 \quad cm^2$ reinforcement area .

$\rho = 2.2727 \quad \%$ reinforcement ratio .

7 Axial and Flexural Interaction Diagram