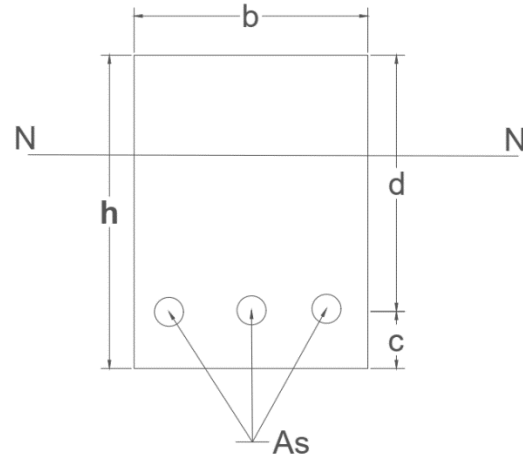|	Project				Job Ref.	
FACULTY OF ENGINEERING **UNIVERSITY OF RUHUNA** **Learning Tool for Reinforced Concrete Design**	Section				Sheet no./rev. 1	
	Calc.by	Date	Chk'd by	Date	App'd by	Date

DEFLECTION CALCULATION (EC2)

STEP 1
Calculate the curvature for uncracked section.

$$\left(\frac{1}{r}\right)_{uc} = \frac{M}{E_{c,eff}I_{uc}}$$

$$\left(\frac{1}{r}\right)_{uc} =$$

STEP 2
Calculate the neutral axis depth of the cracked section

$$x = \frac{-\alpha_e A_s \pm \sqrt{(\alpha_e A_s)^2 + 2b\alpha_e A_s d}}{b}$$

$$x =$$

Calculate curvature for cracked section

$$\left(\frac{1}{r}\right)_{cr} = \frac{M}{E_{c,eff}I_{cr}}$$

$$\left(\frac{1}{r}\right)_{cr} = \xi$$

STEP 3

$$M_{cr} = f_{ctm} \times \left(\frac{b_w h^2}{6}\right) =$$

$$\xi = 1 - \beta \left(\frac{M_{cr}}{M}\right)^2 =$$

$$\frac{1}{r} = \xi \left(\frac{1}{r}\right)_{cr} + \left(1 - \xi\right)\left(\frac{1}{r}\right)_{uc}$$

$$\frac{1}{r} =$$

STEP 4
Calculate the Deflection

$$a = Kl^2 \frac{1}{r}$$

$$a =$$