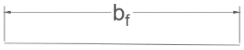
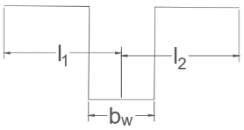
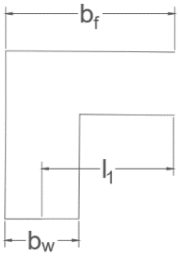
Learning Tool for Reinforced Concrete Design	Project				Job Ref.	
	Section				Sheet no./rev. 1	
	Calc.by	Date	Chk'd by	Date	App'd by	Date

FLEXURAL REINFORCEMENT CALCULATION (EC2)

(FLANGE BEAM)







$f_{cu} =$ Mpa

$f_y =$ Mpa

L = m

M = kN/m

d = mm

$h_f =$ mm

b_w = mm

$K' = 0.167$

$b_{eff} =$

$$K = \frac{M}{bd^2 f_{cu}} =$$

$$Z = d\left\{0.5 + \sqrt{0.25 - \frac{K}{1.134}}\right\} =$$

But not greater than 0.95d

$$x = {(d - z)}/{0.4} =$$

$0.8x \leq h_f$	$0.8x > h_f$
Slab thickness is taken as h_f, hence, neutral axis is in fact within the flange and the beam can be designed as a rectangular beam width. ($b_{eff} = b$) $A_S = {M}/{0.87 f_{yK} Z}$ $A_S =$	So the rectangular stress block goes outside the flange region, and the neutral axis goes inside the web region. The above Z value is then not valid. $M_{uf} = 0.567 f_{ck}(b_{eff} - b_w) h_f (d - 0.5h_f)$ $M_{uf} =$ $K_f = \frac{M - M_{uf}}{f_{ck} b_w d^2}$ $K_f =$ $A_S = \frac{M_{uf}}{0.87 f_{yk}(d - 0.5h_f)}$ $A_S =$ **Check for maximum reinforcement** $A_{S,max} = 0.04 A_c =$