Flanged Sections

The effective width of flange, over which uniform stress conditions can be assumed, may be taken as $b_{eff} = b_w + b'$, where

$b' = 0.1(a_w + l_0) \leq 0.2l_0 \leq 0.5a_w$ for L beams
$b' = 0.2(a_w + l_0) \leq 0.4l_0 \leq 1.0a_w$ for T beams

In the above expressions, b_w is the web width, a_w is the clear distance between the webs of adjacent beams and l_0 is the distance between successive points of zero-bending moment for the beam. If l_{eff} is the effective span, l_0 may be taken as $0.85l_{eff}$ when there is continuity at one end of the span, and $0.7l_{eff}$ when there is continuity at both ends.
For **up-stand beams**, when considering hogging moments, l_0 may be taken as $0.3l_{eff}$ at internal supports and $0.15l_{eff}$ at end supports.

l_{eff} =8000mm; a_w =4000mm

l_0 =0.85 l_{eff} continuity at one end

l_0 =0.70 l_{eff} continuity both end

up-stand beams

l_0 =0.3 l_{eff} at internal supports

l_0 =0.15 l_{eff} at end supports

Example:

L beam:
b' =0.1(4000+0.85*8000)<0.2*0.85*8000<0.5*4000 for continuity at end.
=1080<1360<2000 Least =1080mm
$b_f = b_w$+1080

$=230+1080=1310mm$ if $b_w=230mm$

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