should be further reduced by multiplying it by the rib shape efficiency factor $k_r = 0.8$ for the case of standard trapezoidal ribs.

5.4.2.7 – To achieve ductility in plastic hinges, the ratio x/d of the distance x between the top concrete compression fibre and the plastic neutral axis, to the depth d of the composite section, should conform to the following expression:

$$\frac{x}{d} < \frac{\varepsilon_{cu2}}{\varepsilon_{cu2} + \varepsilon_a} \qquad \textbf{(5.4)}$$

where ε_{cu2} is the ultimate compressive strain of concrete (see EN 1992-1-1:2004); ε_a is the total strain in steel at Ultimate Limit State.

5.4.2.8 – The rule in **5.4.2.7** is deemed to be satisfied when x/d of a section is less than the limits given in **Table 5.4**.

Table 5.4. Limit values *x*/*d* for ductility of beams with slabs

f_y (MPa)	*x*/*d* upper limit
355	0.27
235	0.36

5.4.3. Effective width of slab

5.4.3.1 – The total effective width b_{eff} of concrete flange associated with each steel web should be taken as the sum of the partial effective widths b_{e1} and b_{e2} of the portion of the flange on each side of the centreline of the steel web. The partial effective width on each side should be taken as b_e given in **Table 5.5**, but not greater than the actual available widths b_1 and b_2 defined in **5.4.3.2**.

5.4.3.2 – The actual width b of each portion should be taken as half the distance from the web to the adjacent web, except that at a free edge the actual width is the distance from the web to the free edge.

5.4.3.3 – The partial effective width b_e of the slab to be used in the determination of the elastic and plastic properties of the composite *T* sections made of a steel section connected to a slab are defined in **Table 5.5**.

Table 5.5 – I. Partial effective width b_e of slab for elastic analysis

b_e	Transverse element	b_e for I (elastic)
At interior column	Present or not present	For negative *M*: 0.05 *l*
At exterior column	Present	For positive *M*: 0.0375 *l*
At exterior column	Not present, or rebars not anchored	For negative *M*: 0 For positive *M*: 0.025 *l*