(b) The spacing of main bars should not exceed the lesser of:

$$3d, \text{ 300mm, or } \frac{75\,000\beta}{pf_y}$$

where p is the reinforcement percentage and $0.3 < p < 1.0$ and

$$\beta \text{ is the ratio: } \frac{\text{moment after redistribution}}{\text{moment before redistribution.}}$$

If $p \geqslant 1$ use $p = 1$ in formula above.

Spacing of distribution bars should not exceed the lesser of:

$3d$ or 400mm.

Main bars in slabs should be not less than size 10.

The area of reinforcement in either direction should be not less than the greater of:

one-quarter of the area of main reinforcement
or 0.001 3bh in the case of high yield steel
or 0.002 4bh in the case of mild steel
or, if control of shrinkage and temperature cracking is critical, 0.0025bh high yield steel or 0.003bh mild steel

where h is the overall depth of the slab in mm.

Table 14 Lever arm and neutral axis depth factors for slabs

$K = M/bd^2f_{cu}$	0.05	0.06	0.07	0.08	0.09	0.100	0.104	0.110	0.119	0.130	0.132	0.140	0.144	0.150	0.156
$a_1 = (z/d)$	0.94	0.93	0.91	0.90	0.89	0.87	0.87	0.86	0.84	0.82	0.82	0.81	0.80	0.79	0.775
$n = (x/d)$	0.13	0.16	0.19	0.22	0.25	0.29	0.30	0.32	0.35	0.39	0.40	0.43	0.45	0.47	0.50
	30%							25%		20%		15%		0–10%	

Limit of Table for various % of moment redistribution

(c) Two-way slabs on linear supports

The reinforcement calculated from the bending moments obtained from clause 4.2.3.3 should be provided for the full width in both directions.

At corners where the slab is not continuous, torsion reinforcement equal to three-quarters of the reinforcement in the shorter span should be provided in the top and bottom of the slab in each direction for a width in each direction of one-fifth of the shorter span.

(d) Flat slabs

Column and middle strips should be reinforced to withstand the design moments obtained from clause 4.2.3.4. In general two-thirds of the amount of reinforcement required to resist the negative design moment in the column strip should be placed in a width equal to half that of the column strip symmetrically positioned about the centreline of the column.

The minimum amounts of reinforcement and the maximum bar spacing should be as stated in *(b)*.

4.2.5.2 Shear

In the absence of heavy point loads there is normally no need to calculate shear stresses in slabs on linear supports.

For heavy point loads the punching shear stress should be checked using the method for shear around columns in flat slabs.

In flat slabs, shear stresses should be checked first at the column perimeter:

$$v = \frac{1000V_{eff}}{U_c d} \text{ N/mm}^2$$

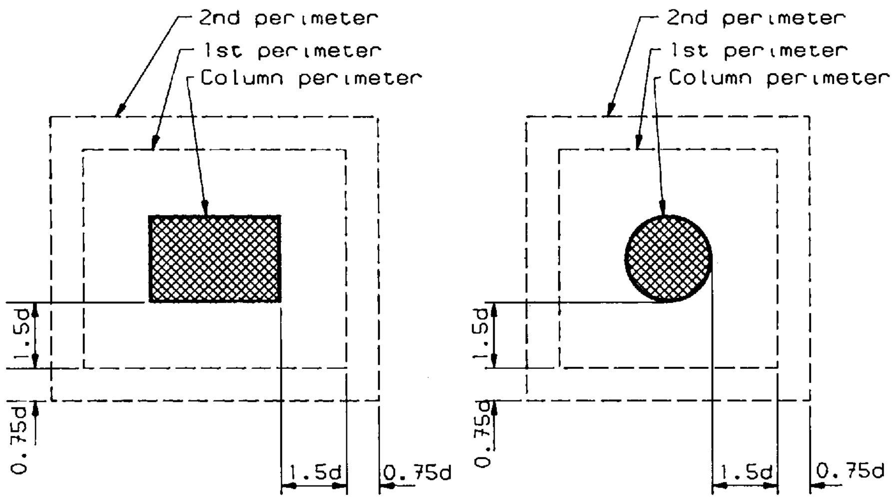
where V_{eff} is the effective shear force in kN (see clause 4.2.3.4),
d is the average effective depth in mm of both layers and
U_c **is the column perimeter in mm.**
v must in this case not exceed $0.8\sqrt{f_{cu}}$ or 5N/mm^2, whichever is the lesser.

The shear stresses should then be checked at successive shear perimeters:

$$v = \frac{1000V_{eff}}{Ud} \text{ N/mm}^2$$

where U is the shear perimeter in mm as defined in Figs. 7 and 8.

V_{eff} may be reduced by the load within the perimeter being considered.



7 Shear perimeters for internal columns

Where a column is close to a free edge, the effective length of a perimeter should be taken as the lesser of the two illustrated in Fig. 8.

When openings are less than six times the effective depth of the slab from the edge of a column then that part of the perimeter that is enclosed by radial projections from the centroid of the column to the openings should be considered ineffective as shown in Fig. 9.

The first perimeter is checked. If the shear stress here is less than the permissible ultimate shear stress v_c in Table 15, no further checks are required. If $v > v_c$, successive perimeters have to be checked until one is reached where $v < v_c$.