interior panel. The maximum design moment that can be transferred to a column by this strip is given by:

$$M_{max} = 0.15\, f_{cu} b_e d^2$$

where d is the effective depth for the top reinforcement in the column strip. The moments obtained from Table 11 or a frame analysis should be adjusted at the columns to the above values and the midspan moments increased accordingly.

Where the slab is supported by a wall, or an edge beam with a depth greater than 1.5 times the thickness of the slab, the design moments of the half column strip adjacent to the beam or wall should be one-quarter of the design moments obtained from the analysis.

Effective shear forces in flat slabs

The critical consideration for shear in flat slab structures is that of punching shear around the columns. This should be checked in accordance with clause 4.2.5.2 except that the shear forces should be increased to allow for the effects of moment transfer as indicated below.

After calculation of the design moment transmitted by the connection, the design effective shear force V_{eff} at the perimeter of the column should be taken as:

$V_{eff} = 1.15\, V_t$ for internal columns with approximately equal spans

where V_t is the design shear transferred to the column and is calculated on the assumption that the maximum design load is applied to all panels adjacent to the column considered.

For internal columns with unequal spans

$$V_{eff} = V_t + \frac{1.5\, M_t}{x}$$

where x is the side of the column perimeter parallel to the axis of bending and M_t is the design moment transmitted to the column.

At corner columns and at edge columns bent about an axis parallel to the free edge, the design effective shear is $V_{eff} = 1.25\, V_t$.

For edge columns bent about an axis perpendicular to the edge, the design effective shear is $1.4\, V_t$ for approximately equal spans. For edge columns with unequal spans

$$V_{eff} = 1.25\, V_t + \frac{1.5\, M_t}{x}$$

4.2.4 Span/effective depth ratios

Compliance with the ratios below will generally limit total deflections to span/250.

4.2.4.1 Slabs on linear supports

The span/effective depth should not exceed the appropriate value in Table 12 multiplied by the modification factor in Table 13.

Table 12 Span/effective depth ratios for solid slabs

cantilever	7
simply supported	20
continuous	26

Table 13 Modification factors for M/bd^2 for slabs

Steel stress N/mm²	M/bd^2 0.50	0.75	1.00	1.50	2.00	3.00
(f_y = 250) 156	2.00	2.00	1.96	1.66	1.47	1.24
(f_y = 460) 288	1.68	1.50	1.38	1.21	1.09	0.95

Notes to Tables 12 and 13
1. For spans in excess of 10m, the above ratios should be multiplied by 10/(span in metres).
2. *M* in the Table is the design ultimate moment at the centre of the span or for a cantilever at the support.
3. For two-way slabs the ratio refers to the shorter span, and the short span moment should be used for *M*.

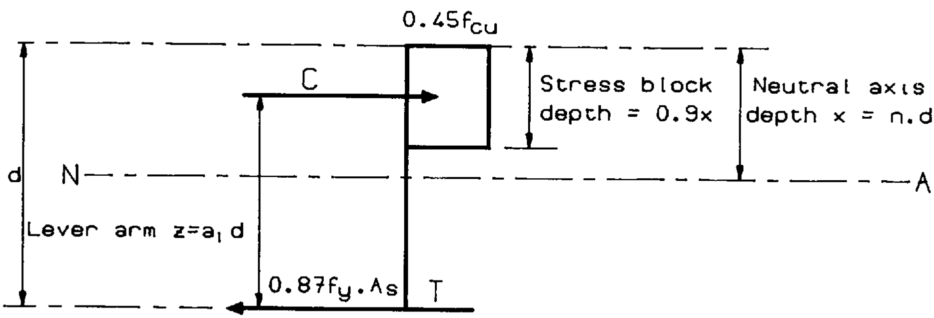
4.2.4.2 Flat slabs without drops

The ratio of the longer span to the corresponding effective depth should not exceed the values for slabs on linear supports multiplied by 0.90.

4.2.5 Section design – solid slabs

4.2.5.1 Bending

(*a*) Check that the applied moment is less than the moment of resistance using the formulas that are based on the stress diagram in Fig 6.



6 Stress diagram

For concrete the moment of resistance $M_u = K' f_{cu} bd^2$
where K' is obtained from below:

% moment redistribution	0 to 10	15	20	25	30
Values K'	0.156	0.144	0.132	0.119	0.104

The area of tension reinforcement is then given by:

$$A_s = \frac{M}{(0.87 f_y) z}$$

where z is obtained from Table 14.

For two-way spanning slabs, care should be taken to use the value of d appropriate to the direction of the reinforcement.