IS-CODE PROVISIONS FOR DESIGN OF SLABS:

As per IS: 456-2000 Code of practice for design of R.C.C structures recommends the following:

i) For frames the effective spans taken as per clause no. 22.2 (a) of IS:456-2000

ii) Effective depth is the distance between the centroid of the area of the tension reinforcement to the top of compression fiber excluding the finishing.

iii) When L_y/L_x is Greater than 2, the slab is designed as spanning one-way, when L_y/L_x is less than 2, the slab is designed as spanning two-way as per the coefficients given in table 26of IS: 456-2000 torsion reinforcement need not be provided at any corner contained by edges over both of which the slab is continuous.

iv) Maximum diameter of reinforcing bar shall not exceed the $1/8^{th}$ of the total thickness of slab (clause 25.2.2).

v) Cover to reinforcement, at each end of reinforcing bar not less than 25 mm or less than twice the diameter of such bar (clause 25.4.1).

vi) Cover to reinforcement, for tensile, compressive shear or other reinforcement in slab, not less than 20mm nor less than diameter of such bar.

vii) Maximum permissible spacing of distribution reinforcement shall not be more the 3 times effective depth of slab or 30 cm, whichever is smaller.

viii) Max permissible spacing distribution reinforcement shall not be more the 5 times effective depth of a slab or 45cms whichever is smaller.

ix) No shear reinforcement should be provided for slabs less than 200mm thick. However the increased value of shear resistance in slabs can be taken into account in design.

x) Minimum reinforcement in either direction in slab shall not be less than 0.15 % of total cross-sectional area. However the value can be reduced to 0.12% when HYSD bars are used (clause 25.2.1).

xi) Over the continuous edge of a middle strip the tension reinforcement of the slab is provided to a

distance of 0.2L from the support and at least 50% of the reinforcement is extended to a distance of 0.3L.

xii) Area of steel is calculated by using formula

$$M = 0.87 f_y A_{st} d\left[1 - \frac{A_{st} f_y}{f_{ck} bd}\right]$$

$$A_{st} = \frac{0.5 f_{ck}}{f_y}\left(1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} bd^2}}\right) bd$$