***IS 456 BEAM CODE PROVISIONS .***

Minimum ratio of reinforcement (flexural) **[26.5.1.1]**

Check ratio of tensile reinforcement

Calculate Neutral axis  **[ANNEX G]**

Calculate Moment Capacity  **[ANNEX G]**

Concrete Shear Capacity   **[40.4 c] [T table 19]**

Reinforce Shear Capacity

Shear strength by stirrup  **[40.4 c]**

Max area of Compression Reinforcement **0.04 b d**  **[26.5.1.2]**

Max compression + Tensile steel **0.08 b d**

Calculate Moment Capacity compression steel  **[ANNEX G 1-2]**

xu.max the limiting value of xU **xu.max**  **[38.1]**

***Stress in Compression Steel fsc*  [Annex G 1.2]**

Minimum shear reinforcement **[26.5.1.6]**

Design Shear Strength of Concrete ***Tc [Table 19]***

***Shear Strength of Concrete Tc [sp 24 39.2.1]***

*Shear Strength of Concrete Tcmax*  *[Table 20 , sp 16 pno124]*

Design of Shear Reinforcement **[40.4]**

***Xu / d Limit [Table 20 , sp 16 pno124]***

***Effective Width of Flange [*23.1.2*]***

**lo = 0.7 Effective length**

***Beam limiting Moments [Annex G]***

***Beam***  ***[Annex G 1.1]***

**T beam**

***Case 1* xu ≤ Df**

***T-Beam***  ***[Annex G 2.1]***

***Case 2* xu > Df &Df/ d ≤ 0.2**

***T-Beam***  ***[Annex G 2.2.1]***

***Case 3* xu > Df &Df/ d > 0.2**

**Yf = (0.15 xu + 0.65 Df)**

***Use if xu > xumax use xu = max in case 2 and 3 [Annex G 2.3]***

Torsion **[41.3]**

**Ve = Vu + 1.6 Tu /b**

Shear equivalent

Equivalent Bending Moment

**Me = Mu Tu(1 + D/b)/1.7**

**Splicing [26.5.5.1]**

Lap splices

Ø ≤ 36 mm

If ø ≥ 36 mm provide spirals around lapped bar

++

**Maximum Allowable Spacing of shear steel [26.5.1.5]**

Min of below

0.75 d

300

***Minimum Distance between Individual Bars [*26.3.2]**

Max of below 2:

Dia of Large Bar

5mm + 20aggregate size

**SPACING OF STIRRUPS IN DOUBLY REINFORCED BEAMS [26.5.3.2 c1]**

Min of below 3:

Min (b,d)

16 Dia(longitutional)

300

**Dia tie must be grater that 0.25 of Dia main bar [26.5.3.2 c2]**

**DEFLECTION**

Long-term deflection/final deflection  **Span/250**  **[23.2 a]**

Short-term Deflection Factor **Span/350 or 20mm** (which ever is less) **[23.2 b ]**

**Span to effective depth [23.2.1]**

For span <=10 cantilever 7

Simply supported 20

Continuous 26

For span >10 **[23.2.1 \_b]**

cantilever 7 x 10/span

Simply supported 20 x 10/span

Continuous 26 x 10/span

L/deff = (Basic ratio)\*(F1)\*(F2)\*(F3) // F1 F2 F3 Modification factors

**Minimum bar spacing Horizontally and vertically [IS 456 26.3.1]**

- Grater of Below

( Max size of aggregate + 5 ) // Max size of aggregate =20

Diameter of larger bar

**Corner Distance Rule [Table 15 26.3.3]**

Not more than one half the clear distance form Is 456 table 15

**Check space of skin bar [26.5.1.3]**

(Vertical spacing)(pg no 157 pc v) d >= 750

Area of As>= 0.001 d\* bw(0.001)% web Area

Reinforcement equally must be distributed equal

Steel Must be at tensile part below the neutral axis ?

**// Cracking**

cracking moment of section

[6.2.2]

[C-2.1]

* + - * + [C-2.1]

**Creep Coefficient (Theta) [6.2.5.1]**

7 days 2.2

28 days 1.6

1 Year 1.1