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

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

Short-term Deflection Factor **Span/350** **[23.2 b ]**

crack moment of section

**[6.2.2]**

**[C-2.1]**

* + - * **+**  **[C-2.1]**

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]**

**Not greater than this :**

**Dia of Large Bar**

**5mm + 20aggregate size**

**Max spacing as per** **[Table 15]**

**Fe 250** 300

**Fe 415** 180

**Fe 500** 150

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

Min of below 3

**Min (b,d)**

**16 Dia(longitutional)**

**300**

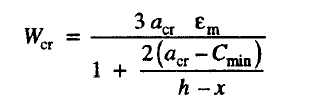
Dia tie must be grater that 0.25 of Dia main bar **[26.5.3.2 c2]**

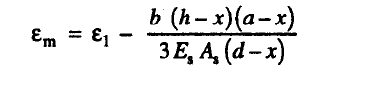
Check space of skin bar  **[26.5.1.3] d >= 750**

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

**Steel Must be at tensile part below the neutral axis ?**

Design surface Crack Width **[Annex F]**





**Cracking Limits** **[35.3.2]**

For Appearance Condition Crack Width Not Exceed 0.3 mm

For Moderate Exposer Condition Crack Width Not Exceed 0.2 mm

For Severe Exposer Condition Crack Width Not Exceed 0.1 mm

For Aggressive Condition Crack width not Exceed 0.004 mm