

PROJECT: BACP House Improvement
SUBJECT: GI Wire Railing

Provide 11" wide two wires (2.3 mm dia) strips at every course (12") with link wires of 2 mm dia fixed at 1'-0" intervals.

* First Floor 12" thick walls.

$$d = 11"$$

$$M_x (-L) = 0.31 \text{ k-ft/ft}$$

$$A_{st} = \frac{0.31 \times 4.002}{0.29} = 4.28 \text{ mm}^2$$

Using Steel beam theory

$$A_{st} = A_{sc} = \frac{M (k-ft) \times 12}{f_y (d - d')} = \frac{M \times 12}{60 d} = \frac{M}{5 d}$$

$$\therefore \text{alternately } A_{st} = A_{sc} = \frac{0.31}{5(11-1)} = 0.0062 \text{ in}^2/\text{ft}$$

$$= 4.00 \text{ mm}^2/\text{ft} \text{ i.e. 2.3 mm dia wire on each face}$$

$$M_x (b) = 0.29$$

$$A_{st} = 4.002 \text{ mm}^2/\text{ft}$$

→ Provide 11" wide two wires (2.3 mm dia) strip at every course (12") with links of 2 mm dia wire fixed at 1'-0" intervals.

* At Ends / Junctions of Walls

- Ground floor (18" thick) $M_2 = 2.13 \text{ k'/ft}$

$$d = 14t - 2'' = 21 \times 12 - 2 = 250''$$

$$A_{st} = \frac{2.13}{2.14} \times 1.30 = 1.294 \text{ mm}^2/\text{ft}$$

→ Provide two wires (2.3 mm dia) strips at ends & junctions

- First floor (12" thick)

$$M_2 = 1.27 \text{ k-ft/ft}$$

$$d = 14t - 2'' = 14 \times 12 - 2 = 166''$$

$$A_{st} = \frac{1.27}{1.52} \times 1.39 = 1.16 \text{ mm}^2/\text{ft width}$$

→ Provide two wires (2.3 mm dia) strips at ends and at junctions.

→ IN CASE OF SINGLE STOREY HOUSE, RESULTS OF 12" THICK FIRST FLOOR WALLS WOULD BE APPLICABLE.