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(b.)

Load intensity for 4 kN load on 30 cm square plate will be

$$q = \frac{4}{(0.3)^2} = 44.44 \text{ kN/m}^2$$

Load Intensity for 200 kN load on 2x2 m footing will be

$$q = \frac{200}{4} = 50 \text{ kN/m}^2$$

Since load intensity is same so,

$$S_f = S_p \times \left(\frac{B_f (B_p + 0.3)}{B_p (B_f + 0.3)} \right)^2$$

$$= 15 \times \left(\frac{2 (0.3 + 0.3)}{0.3 (2 + 0.3)} \right)^2$$

$$= 15 \times \left(\frac{2 \times 0.6}{0.3 \times 2.3} \right)^2$$

$$= 45.3686 \text{ mm}$$

$$\approx 45.37 \text{ mm}$$

Ans.

- (B_f) - footing width

- (B_p) - Plate width

- (S_p) - Plate settlement

- (S_f) - Footing settlement

In Question

- Footing 2m x (2m)

(B_f) - footing width.

- Test plate (30cm) square means, $(B_p) = 0.3$