

Selection of Stirrups for Economy

Selection of stirrup size and spacing for overall cost savings requires consideration of both design time and fabrication and placing costs.

Minimum cost solutions for simple placing should be limited to three spacings: the first stirrup located at two inch from the face of the support (as a minimum clearance), and intermediate spacing, and finally, a maximum spacing at the code limit of $d/2$.

Larger size stirrups at wider spacing are more cost effective (e.g., using No.4 for No.3 at double spacing and No.5 and No.4 at 1.5 spacing), if it is possible to use them within the spacing limitations of $d/2$ and $d/4$.

In order to adequately develop the stirrups, the following requirements must be satisfied (ACI code 12.13):

- 1) Stirrups shall be carried as close to the compression and tension surfaces of the member as cover requirements permit.
- 2) For No.5 stirrups and smaller, a standard stirrup hook (as defined in ACI 7.1.3) shall be provided around longitudinal reinforcement.
- 3) Each bend in the continuous portion of the stirrup must enclose a longitudinal bar.

To allow for bend radii at corners of U stirrups, the minimum beam widths given in the following table should be provided.

Table: Minimum Beam Widths for Stirrups.

Stirrup size	Minimum beam width (b_w)
No.3	10 in
No.4	12 in
No.5	14 in