CODE

25.7.1.2 Between anchored ends, each bend in the continuous portion of a single or multiple U-stirrup and each bend in a closed stirrup shall enclose a longitudinal bar or strand.

25.7.1.3 Anchorage of deformed bar and wire shall be in accordance with (a), (b), or (c):

(a) For No. 16 bar and MD200 wire, and smaller, and for No. 19 through No. 25 bars with $f_{yt} \le 280$ MPa, a standard hook around longitudinal reinforcement
(b) For No. 19 through No. 25 bars with $f_{yt} > 280$ MPa, a standard hook around a longitudinal bar plus an embedment between midheight of the member and the outside end of the hook equal to or greater than $0.17 d_b f_{yt}/(\lambda \sqrt{f'_c})$, with λ as given in Table 25.4.3.2
(c) In joist construction, for No. 13 bar and MD130 wire and smaller, a standard hook

25.7.1.4 Anchorage of each leg of welded wire reinforcement forming a single U-stirrup shall be in accordance with (a) or (b):

(a) Two longitudinal wires spaced at a 50 mm spacing along the member at the top of the U
(b) One longitudinal wire located not more than $d/4$ from the compression face and a second wire closer to the compression face and spaced not less than 50 mm from the first wire. The second wire shall be permitted to be located on the stirrup leg beyond a bend, or on a bend with an inside diameter of bend of at least $8d_b$.

COMMENTARY

R25.7.1.3 Straight deformed bar and wire anchorage is not permitted because it is difficult to hold such a stirrup in position during concrete placement. Moreover, the lack of a standard stirrup hook may make the stirrup ineffective as it crosses shear cracks near the end of the stirrup.

For a No. 16 or MD200 or smaller stirrup, anchorage is provided by a standard hook, as defined in 25.3.2, hooked around a longitudinal bar.

For a No. 19, No. 22, or No. 25 stirrup with f_{yt} of only 280 MPa, a standard stirrup hook around a longitudinal bar provides sufficient anchorage. For a No. 19, No. 22, or No. 25 stirrup with higher strength, the embedment should be checked. A 135-degree or 180-degree hook is preferred, but a 90-degree hook may be used provided the free end of the 90-degree hook is extended the full 12 bar diameters as required in 25.3.2. Because it is not possible to bend a No. 19, No. 22, or No. 25 stirrup tightly around a longitudinal bar and due to the force in a bar with a design stress greater than 280 MPa, stirrup anchorage depends on both the type of hook and whatever development length is provided. A longitudinal bar within a stirrup hook limits the width of any flexural cracks, even in a tension zone. Because such a stirrup hook cannot fail by splitting parallel to the plane of the hooked bar, the hook strength as used in 25.4.3.1(a) has been adjusted to reflect cover and confinement around the stirrup hook.

In joists, a small bar or wire can be anchored by a standard hook not engaging longitudinal reinforcement, allowing a continuously bent bar to form a series of single-leg stirrups along the length of the joist.

R25.7.1.4 The requirements for anchorage of welded wire reinforcement stirrups are illustrated in Fig. R25.7.1.4.