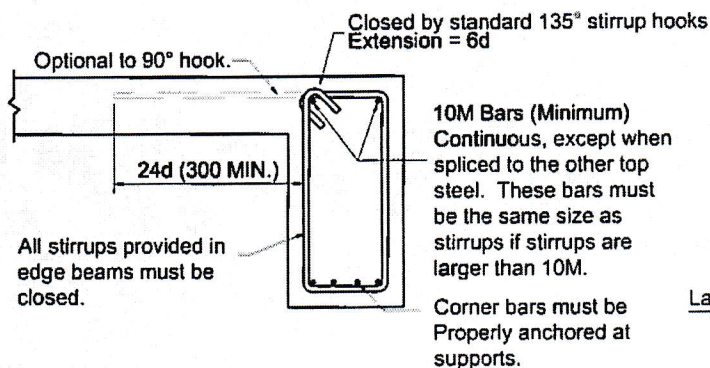


## 5 STANDARD PRACTICE - DETAILING (CONT...)

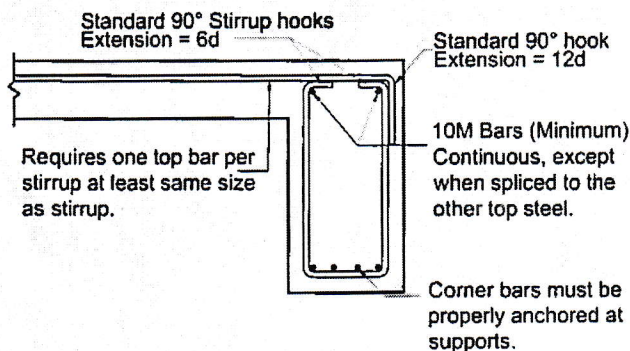
### CLOSED STIRRUP ALTERNATE

The best method for assembling closed stirrups around longitudinal bars for beams and girders is to preassemble the entire cage and drop in place into the form. This practice is impossible where the longitudinal beam bars must be interlaced through closely fitting vertical column bars and above and below longitudinal slab and/or beam bars intersecting from right angles. In such cases, out of necessity, common practice is to place stirrups loosely in the formwork, "spring" them open and drop longitudinal steel in place. This rebending twice in "springing" closed stirrups is an abuse of the reinforcing steel. Outright breakage, or worse, microscopic unnoticed cracks in the steel may occur at bend points.

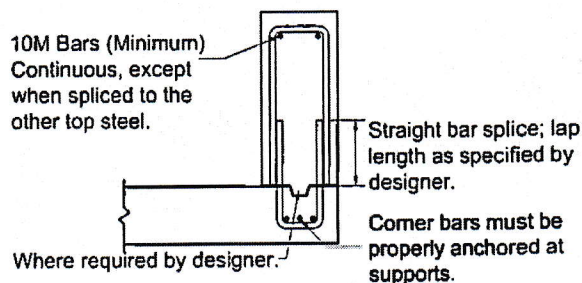
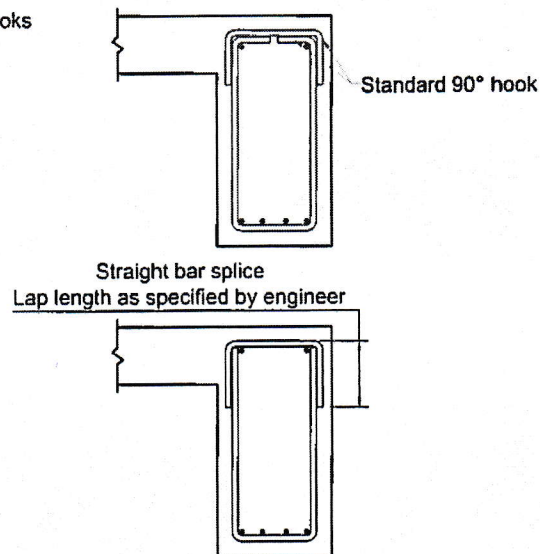
The following recommendations for two-piece assemblies to form closed stirrups avoids such difficulties: Where the Designer shows stirrups in any edge or spandrel beam, the code requires that these stirrups be closed and that at least one longitudinal bar shall be located in each corner of the beam section; the size of this bar is to be at least equal to the diameter of the stirrup but not less than 10M. These details must be indicated by the Designer. The typical details are shown below for normal and upturned edge or spandrel beams. For easier placing of the longitudinal bars in the beam, details for two-piece closed stirrups are shown. For the same reasons, the 90° stirrup hook is preferred. The Designer should show the general arrangement of all such bars and stirrups.



**Stirrup as Closed Tie**



**Stirrup and Top Bars  
Form Closed Ties**



**Two-Piece Stirrups  
Form Closed Tie**