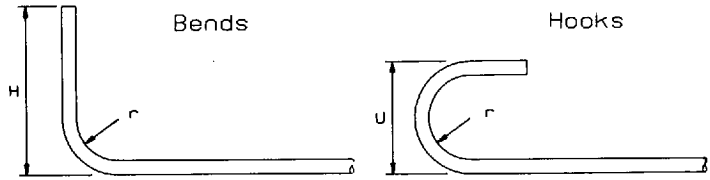
Table 41 Minimum radii, bend and hook sizes and effective anchorage lengths



	Grade 250 bars					Grade 460 bars				
		Bend		Hook			Bend		Hook	
Bar size	r mm	H mm	Effective anchorage length†	U mm	Effective anchorage length†	r mm	H mm	Effective anchorage length†	U mm	Effective anchorage length†
6*	12	165	15	40	16	18	170	15	50	24
8	16	170	15	50	16	24	175	15	70	24
10	20	170	13	60	16	30	180	15	85	24
12	24	175	11	75	16	36	185	14	100	24
16	32	185	9	100	16	48	195	12	135	24
20	40	190	8	120	16	60	215	12	165	24
25	50	230	8	150	16	100	310	12	260	24
32	64	275	8	195	16	128	380	12	330	24
40	80	335	8	240	16	160	455	12	410	24

Notes to Table 41
1. *Bar size may not be freely available.
2. Values of H are the theoretical maximum values and allow for a 50mm positive cutting and bending tolerance.
3. Values of U do not include an allowance for 'springback' after bending. For Grade 460 bars an allowance for the actual circumscribing bar diameter has been included.
4. †Effective anchorage lengths are given as multiples of bar size.

Where a bar is fully stressed through the length of a bend, greater bending radii may be required to limit the compressive stress on the inside of the bend.

4.12.5 Curtailment of reinforcement

In every flexural member except at end supports every bar should extend beyond the point at which it is no longer needed, for a distance at least equal to the greater of:

(a) the effective depth of the member or
(b) twelve times the bar size

and in addition, for a bar in the tension zone, one of the following distances for all arrangements of design ultimate load:

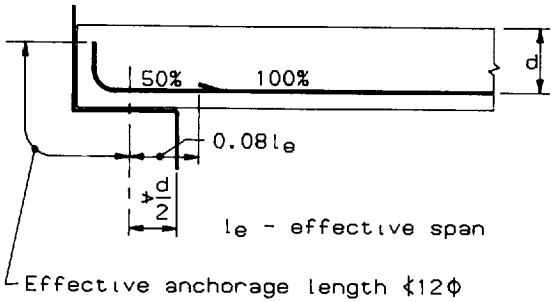
(c) an anchorage length appropriate to its design strength ($0.87f_y$) from the point at which it is no longer required to assist in resisting the bending moment
(d) to the point where the design shear capacity of the section is greater than twice the design shear force at that section or
(e) to the point where other bars continuing past that point provide double the area required to resist the design bending moment at that section.

The point at which a bar is no longer required is the point where the design resistance moment of the section, considering only the continuing bars, is equal to the design moment.

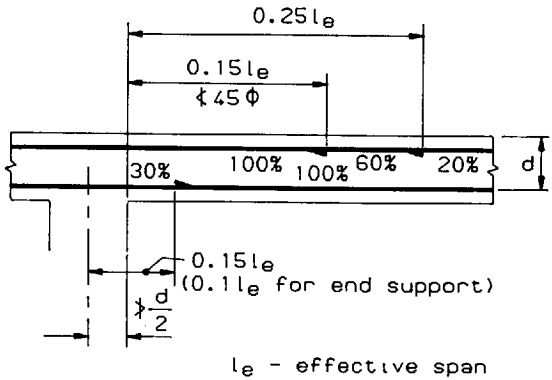
As curtailment of substantial areas of reinforcement at a single section can lead to the development of large cracks at that point, it is essential to stagger the curtailment points.

Alternatively, bars may be curtailed as shown in Figs. 20 to 24 for cases where:

(i) the loading is predominantly uniformly distributed and
(ii) for continuous beams and slabs the spans do not differ by more than 15% of the longest span.



20 Simply supported beams and slabs



21 Continuous beams